DOCUMENT RESUME

ED 297 692 IR 012 249

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TITLE VIPES: Video Interacting "Personably" with Exceptional Student Education.
PUB DATE Jan 86
NOTE 104p.; Handout distributed in connection with a presentation at the Florida Instructional Computing Conference (Orlando, FL, January 1986).
PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS Computer Assisted Instruction; *Computer Literacy; *Computer Software; *Disabilities; Elementary Secondary Education; *Input Output Devices; *Interactive Video; Microcomputers; Scripts; Special Education; Videotape Recordings
IDENTIFIERS Florida Diagnostic and Learning Resources Systems; Instructional Technology Services Network FL

ABSTRACT

This packet of materials was distributed in connection with a presentation on the Florida Diagnostic and Learning Resources System (FDLRS) Instructional Technology Network's production of an interactive videocassette tape for use for self-directed inservice study for teachers and administrators working with handicapped students. The handout includes the script for the videocassette tape, which was entitled "Microcomputer Adaptive Peripheral Devices for Handicapped Students"; a draft version of the SuperPILOT program that directed the Panasonic Video Tape Player/Recorder and Apple IIe microcomputer; a list of hardware and software requirements; a sample "pre-requisite" self-directed instructional packet for teachers; and a partial ERIC bibliography on developing interactive video. (Author/DJR)

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VIPES
Video Interacting "Personably" with Exceptional Student Education

FICC 1986

IR013349

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Prepared by the

Florida Diagnostic and Learning Resources System
Instructional Technology Services Network

for the
Florida Instructional Computing Conference

January 1986

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This product was developed through the Instructional Technology Services Grant. The Instructional Technology Services Grant is funded through Federal Assistance for the Education of the Handicapped, P.L. 91-230, EHA, Part B, to provide instructional technology support services to exceptional student education programs. The Florida Diagnostic and Learning Resources System (FDLRS) is funded through Federal Assistance for the Education of the Handicapped, P.L. 91-230, EHA, Part B, and State Assistance through General Revenue apporpriations to provide diagnostic and instructional support services to Florida's exceptional student education programs, statewide.

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Acknowledgement is given to the following individuals and organizations who provided video footage, slides, or technical assistance to make this product possible.

Florida Diagnostic and Learning Resources System
Instructional Technology Network
(FDLRS)

Bureau of Education for Exceptional Students
Florida Department of Education
Tallahassee, FL
(BEES)

Communication Systems Evaluation Center
Orlando, FL
(CSEC)

Computer Resource Center
Florida School for the Deaf and Blind
St. Augustine, FL
(CRC)

John Sutton, Video Editing
FDLRS/Alpha

Lyben Computer Systems
Troy, MI

Mary Ann Hadman, Programmer
Lincoln ESE Center
School Board of Palm Beach County

Prentke Romich Company
Wooster, Ohio

Project RETOOL
Council for Exceptional Children
Reston, VA

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TABLE OF CONTENTS

I. Video Script - "The World of Adaptive Peripherals"

II. Hardware requirements for Interactive Video Tape

III. Apple IIe SuperPILOT Program

To save space, the program listing is for the first video segment only. The same program commands were repeated for each following segment with frame references changed to match the progression of the video tape.

IV. Selected ERIC Bibliography

V. Information Sheet - Interactive Videodisc Compiled by Barbara Allen, M.S. CCC-SP

Permission to reproduce this document was granted by Barbara Allen, M.S. CCC-SP.

VI. Self-Instructional Packet - "Introduction to Computer Hardware and Software"

The content of this packet is a pre-requisite to viewing the interactive video. An individual who needs a foundation in computer literacy, should use the packet or have inservice training prior to viewing the interactive video.

Acknowledgement is given to the following individuals and organizations who provided video footage or technical assistance to make this product possible.

Communication Systems Evaluation Center (CSEC)
Orlando, Florida

Computer Resource Center (CRC)
Florida School for the Deaf and Blind
St. Augustine, Florida

John Sutton, Specialist
FDLRS/Alpha

"Lainey System"
Prentke Romich Company
Wooster, Ohio

Lyben Computer Systems
Troy, Michigan

Mary Ann Hadman, Programmer
Lincoln ESE Center
School Board of Palm Beach County

Project RETOOL
Council for Exceptional Children (CEC)
Reston, Virginia

Queens College
Speech and Hearing Center
Flushing, New York

Walter Cornnell, Programmer
Department of Instructional Computing Services
School Board of Palm Beach County

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Sarasota, Florida

Slide 1	A New Era
Slide 2 (Video Graphic)	Introducing the World of Adaptive Computer Peripherals for the Handicapped
Slide 3	Produced by the FDLRS Instructional Technology Network
Slide 4	In Conjunction with the Bureau of Education for Exceptional Students - Florida Department of Education
Slide 5	Funding Statement

BEGIN NARRATION

Slide 6

Modern technology is rapidly becoming a major force in improving the lives of disabled persons.

Slide 7

Computers offer valuable learning experiences and alternate communication systems for individuals who have handicaps.

Slide 8

Many software programs have been written specifically for exceptional students. These programs include both commercial products, licensed software, and public domain programs.

Slide 9

To use this software numerous adaptive devices are available which give handicapped persons equal access to modern technology.

Slide 10

For example, the visually impaired need an alternative to the video screen. Distractable students need limited input devices and controlled output devices.

Slide 11
Slide 12

Non-readers need alternatives to video text output. Physically handicapped and motor impaired students may need an alternative to the keyboard.

Slide 13

The purpose of this interactive video is to show input and output devices that increase the accessibility of computer technology for handicapped persons.

Slide 14

When assessing the needs of a handicapped person's ability to use the computer, two major parts of the hardware must be looked at closely. Input devices, such as the keyboard, may prohibit computer access by some exceptional students.

Slide 15

Output devices, such as the video screen display, can also exclude some exceptional students.

Slide 16

Each part of the computer must be examined carefully to ensure an individual student has full access to all the functions.

Slide 17

The standard means used to input information into a computer is the keyboard. Most computer keyboards are identical to typewriters except they have the addition of special function keys. Special function keys normally have names such as BREAK, RESET, CONTROL, and CLEAR.

Slide 18	The standard keyboard can be used by most exceptional students. Whenever possible, the standard keyboard should be used because it remains the most efficient way of interacting with a computer.
Video (RP)	The most common mode of interacting with a computer is to use the hands to type on a keyboard. When this is not possible, a number of alternatives exist for the handicapped individual. A pencil can be attached to the hand with velcro or with a brace to activate the keys. Pointers or indicators can be attached to other body parts as well. The mouthstick and headstick are two common pointing devices.
Slide 19	In each case, the selection of an adaptive device should be made with great care, taking into consideration the physical well being of the handicapped student.
Slide 20	Several adaptations to the standard keyboard are available to assist students with specific needs.
Slide 21	The first is a protective membrane which covers the keyboard and protects it from liquid. This protection allows use of the keyboard by students who have drooling problems.
Slide 22	The protective membrane does require more pressure to activate the keys which may make it difficult for some students to use. On the other hand, some users will find that the added pressure required to activate the keys helps control accidental input.
Slide 23	The second adaptation for a standard keyboard is a template that can be custom designed to restrict access and limit stimuli.
Slide 24	The template allows students who have uncontrolled random motions to rest their hands on the keyboard without unintentionally activating keys.
Slide 25	Templates can be custom designed to allow access to an entire keyboard or to just a few select keys.

Slide 26

Slide 27

Slide 28

A third variation of the standard keyboard relates to the key size or individual points with which a person must make contact to input information into the computer. For students with limited fine motor skills, an enlarged keyboard can be an alternative. A Muppet Keyboard and the Unicorn Keyboard are examples of enlarged keyboards that illustrate the key size differences available to individuals needing a larger contact surface.

Slide 29

Slide 30

The Unicorn Keyboard works with the Adaptive Firmware Card. It can be mounted on a wheel chair and programmed to accept delayed input. A student can rest her hands on the keyboard until he find the correct key and then presses it for the computer to accept the response.

Slide 31

In selecting a larger keyboard, it is important to evaluate the range of motion needed to reach contact points. The standard keyboard has a range of motion confined to 4" by 12". The Unicorn Keyboard is much larger. The ability of the student to reach the different contact points must be examined.

VIDEO GRAPHIC
"Review"

Let's review some of the material on the video tape by answering some questions on the computer.

STOP NARRATION - PAUSE

The purpose of this video is to

a) demonstrate that severely handicapped students cannot use a computer.

b) demonstrate how difficult it is to set up computer access by handicapped students.

c) demonstrate how computers make handicapped student's lives easier.

d) demonstrate some of the alternate input and output devices that can be used by handicapped students.

What is the primary purpose of the keyboard membrane?

a) to allow for easy typing by user.

b) to protect the keyboard from liquids.

c) to protect the keyboard from dust.

d) to allow only strong, healthy students to use the keyboard.

A template

a) protects the keyboard from uncontrolled movement.

b) allows handicapped students to rest their hands on the keyboard.

c) can be custom designed.

d) all of the above.

BEGIN NARRATION

Slide 32

For handicapped students who need more specialized adaptations, there are three groups of input devices to select from:

VIDEO GRAPHICS
"Switches" switches

"Video Pointing" video pointing

"Voice Recognition" voice recognition.

Slide 33

Before selecting one or more of these specialized adaptations for a particular student, user capabilities sould be assessed in a number of areas with consideration for the requirements of each control interface.

Slide 34

In this evaluation, the current as well as future physical status of the person should be analyzed. An individual student may begin at one level of computer access with a future goal of developing skill in a faster technique.

Video "Lainey" 6.28 11.53 9.42	In evaluating an individual student, the following capabilities need to be examined. All actions over which the person has voluntary, consistent control should be considered as potential sources for activating a control interface. The action determines the configuration of the device selected.
VIDEO GRAPHIC OVERLAY "Consistent Control"	
VIDEO GRAPHIC OVERLAY "Functional Range"	The functional range of motion exhibited by the person will influence the size of the interface and its placement for the individual.
VIDEO GRAPHIC OVERLAY "Accuracy and Timing"	The accuracy and timing ability of the individual will determine if they can use a standard keyboard, enlarged keyboard, switch or other control interface.
VIDEO GRAPHIC OVERLAY "Force"	The force an individual generates will effect his ability to operate many control interfaces. A student who bangs the keyboard with a clinched fist will need an alternate input device. Another student who has finger motion but little strength to depress a key, will also need an alternate input device.
VIDEO GRAPHIC OVERLAY "Movement"	The physical movement of each individual student is also an important consideration. It is through movement that students will have direct contact with the computer. The control interface should capitalize on the student's most consistent and reliable physical movement.
Slide 35	Switches have been used in some exceptional student education classrooms to control battery operated toys. This gives the student a degree of control over his environment that is not otherwise possible. Switches used in this manner, reinforce the concept of cause and effect. When the student touches the switch, the toy moves.
Slide 36	
Slide 37	These same switches can be used as input devices for microcomputers when at least one of three conditions is met:
Slide 38	First, use commercially prepared software which has been programmed to accept switch input.
Slide 39	Second, reprogram public domain software with commands to accept switch input or

Slide 40

Third, add specific hardware to the computer such as an Adaptive Firmware Card to allow switch input for all software.

Slide 41

The first two conditions for using switches with microcomputers involve the selection of specific software or reprogramming software to accept signals from switches.

Slide 42

The third condition involves the purchase of hardware. The Adaptive Firmware Card is designed to provide transparent access to the Apple IIe for people who need an alternative to the standard keyboard.

Slide 43

Transparent access means the adaptive firmware card allows an adaptive switch to replace the usual keyboard for input without interfering with normal operations of a program. Therefore, commercial software does not need to be reprogrammed to accept switch signals.

Slide 44

Slide 45

Slide 46

There are several hundred switches that can be used with handicapped students. In selecting the appropriate switch for an individual, the following guidelines should be followed.

Slide 47
VIDEO GRAPHIC OVERLAY
"Safe,reliable,
sturdy,simple"

Switches should be safe, reliable, sturdy, and simple to use.

Slide 48
"Minimum Effort"

They should require minimum effort while maintaining maximum comfort for the user.

Slide 49
"Easy to Clean and
Repair"

The selected switch should be easy to disassemble for cleaning and maintenance and it should be constructed of standard components for increased availability and ease of repair and replacement.

Video
"Lainey"
1.50

Most importantly, a switch must be selected that a student can move voluntarily and confidently using motor strengths that will be the least tiring.

That motor strength could be head movement, an elbow or foot movement or eye blinking.

Slide 50

A team of individuals including an occupational therapist, physical therapist, the teacher, and a computer instructional technologist should be involved in selecting an appropriate switch for an individual student.

Slide 51	Switches can be activated by a variety of body parts such as head movement or finger movement.
Slide 52	A toggle switch can be located to suit the needs of the individual. The switch is placed where the individual has consistant body movement.
Slide 53	Switches require varying degrees of pressure and are selected to minimize exhaustion in the user. This air cushion switch can be held in the hand or placed on a desk where pressure can be applied.
Slide 54	For individuals with limited arm and leg movement, a brow wrinkle switch may be an option. The brow wrinkle switch is activated by raising or lowering the eyebrows.
Slide 55	Another alternative is the mercury switch which is activated by tilting a body part a specified number of degrees.
VIDEO GRAPHIC "Review"	Lets review the information on the video by answering some question on the computer.

STOP NARRATION

To use a switch with a computer

a) specific software that accepts switch signals must be selected.

o) an Adaptive Firmware Card can be placed in the computer.

c) public domain software can be reprogrammed to accept switch signals.

d) all of the above.

To select a switch for an individual student, the MOST IMPORTANT consideration is

a) to find a consistant motor strength that will not tire the student.

b) to be sure the switch is easy to make.

c) to have transparent access.

d) cost.

When evaluating a student to select a control interface, the following capabilities should be examined.

a) if student pays attention to the video screen

b) if student can sit in front of a computer for 30 minutes or more.

c) consistant movement, timing ability and functional range of motion.

d) motivation.

BEGIN NARRATION

Slide 56

The second group of input devices can be called video pointing devices. This group includes

Slide 57

joysticks, light pens, mouse, digitizing tablets, touch tablets and touch screens.

Video "AD 329-332"

These devices allow the student to use linear movement to move the cursor on the screen.

But, the devices vary considerably in the ease of the input process and the amount of motor coordination needed to successfully operate them.

Video "RP"

The mouse and the joystick require the user to manipulate them in the appropriate direction and in the proper proportion to the screen in order to place the cursor at a specified location on the screen. Then, a button must be pushed to indicate ones selection of a location. This requires good visual-motor coordination.

A finger or any blunt instrument can be used to indicate a choice on the screen when using a touch tablet. A larger touch pad may be helpful for those without fine motor skills.

Many of the video pointing devices have been made popular by the computer home market. Joysticks are used with many computer video games. Touch tablets are available in many toy stores with software that allows the user to create pictures or music.

Slide 58

The mouse is used with several computers to allow easy entry of data into word processing and electronic spreadsheet software programs.

Video "RP"

Another alternative to the keyboard, is to interface a communication board with a computer. The Express III is an example of one communication board that can be interfaced with an Apple computer. For students who have no fine motor skills, the communication board interfaced with a computer, becomes a means of dramatically expanding their potential for learning and communicating.

Video "Tommy"

The third input group that has been developed for computers is voice recognition. Human voice or other sound sequences can be interpreted by the computer as regular input. This requires the user to train the system to understand voice command. The system stores the digitized voice print of the user during the training session. Then, during normal use, the computer matches the voice input to the recorded voice prints to determine what is input.

For example, the sound "ugh" can be given when the computer displays the word "run" during the training. Now, whenever the sound "ugh" is made, the computer performs the run function.

The current technology uses voice prints, which makes it possible for only one person at a time to train the computer for voice command. It is expected that multiple voice recognition will be available soon.

VIDEO GRAPHIC "Review"

Lets review the information on the video by answering some questions on the computer.

END NARRATION - PAUSE

Which of the following words means "putting information into the computer"?

a) processing

b) output

c) input

d) RAM

Video pointing devices include the following group of items:

a) joystick, lightpens, mouse, and touch tablets

b) video screen, keyboard, Express III, switch

c) Adaptive Firmware Card, mercury switch, Unicorn, template

d) membrane, keyguard, toggle switch, air cushion switch

Which statement about voice recognition is false.

a) Voice recognition is a fairly new technology that is still developing.

b) Voice recognition requires that an individual user train the computer system to recognize his voice print.

c) Voice recognition requires consistant voice print from the user.

d) Voice recognition requires that the user speak precise English.

BEGIN NARRATION

Slide 59

The standard output devices for a computer are the printer and the video screen also called a monitor or CRT.

Video

The video screen normally displays text and graphics or pictures using tiny dots of light refered to as pixels. The size of the dots determines the sharpness of the display. A high resolution screen has very small pixels and a very clear, sharp display.

Whenever a CRT is being used it is important to position the video screen away from direct sun light and indoor lighting to avoid glare. Some screens can be tilted to help eliminate glare.

Slide 60

It is also important to position the CRT at a height that is comfortable for the user and to adjust the screen brightness to the lowest level that is comfortable for the user.

The screen contrast should also be adjusted to prevent a fuzzy picture.

Video
"AD 419"

Many vision impaired students can use the standard video screen. Students should be tested to determine whether they can use the standard CRT, or whether they need enlarged displays which can be obtained by using a wider screen monitor or by using a magnifying glass.

For low vision students for whom simple enlargement is insufficient, one of the enlarged graphic displays that are available commercially may be useful. These include screens that can produce letters up to 5" tall.

A completely blind student may choose to use the Optacon to scan text directly from the video screen or printed documentation that accompanies software.

Slide 61

The second standard output device is the printer which produces hardcopy. There are two basic types of printers: the dot matrix and the solid

Slide 62

type printer. Dot matrix form characters from tiny dots, while solid type printers produce output that looks as if it were printed by a typewriter.

Slide 63

For Visually Impaired students who cannot use standard print outputs, braille embossing printers are available. The braille printer is

Slide 64

driven by standard computer printer output commands, but produces standard braille.

Video
"AD 377-415"

A third type of output device is voice or audible signal, refered to as voice synthesizer. Voice or

Which of the following output devices are suitable for use with low vision or blind students?

a) voice synthesizer, braille printer

b) standard CRT, dot matrix printer

c) solid type printer, video screen

d) enlarged video screen, monitor

Which of the following input devices are suitable for use with a student with a drooling problem?

a) keyboard membrane

b) keyboard template

c) voice recognition

d) voice synthesizer

Which of the following input devices are suitable for a student with limited motor control?

a) standard keyboard, joystick

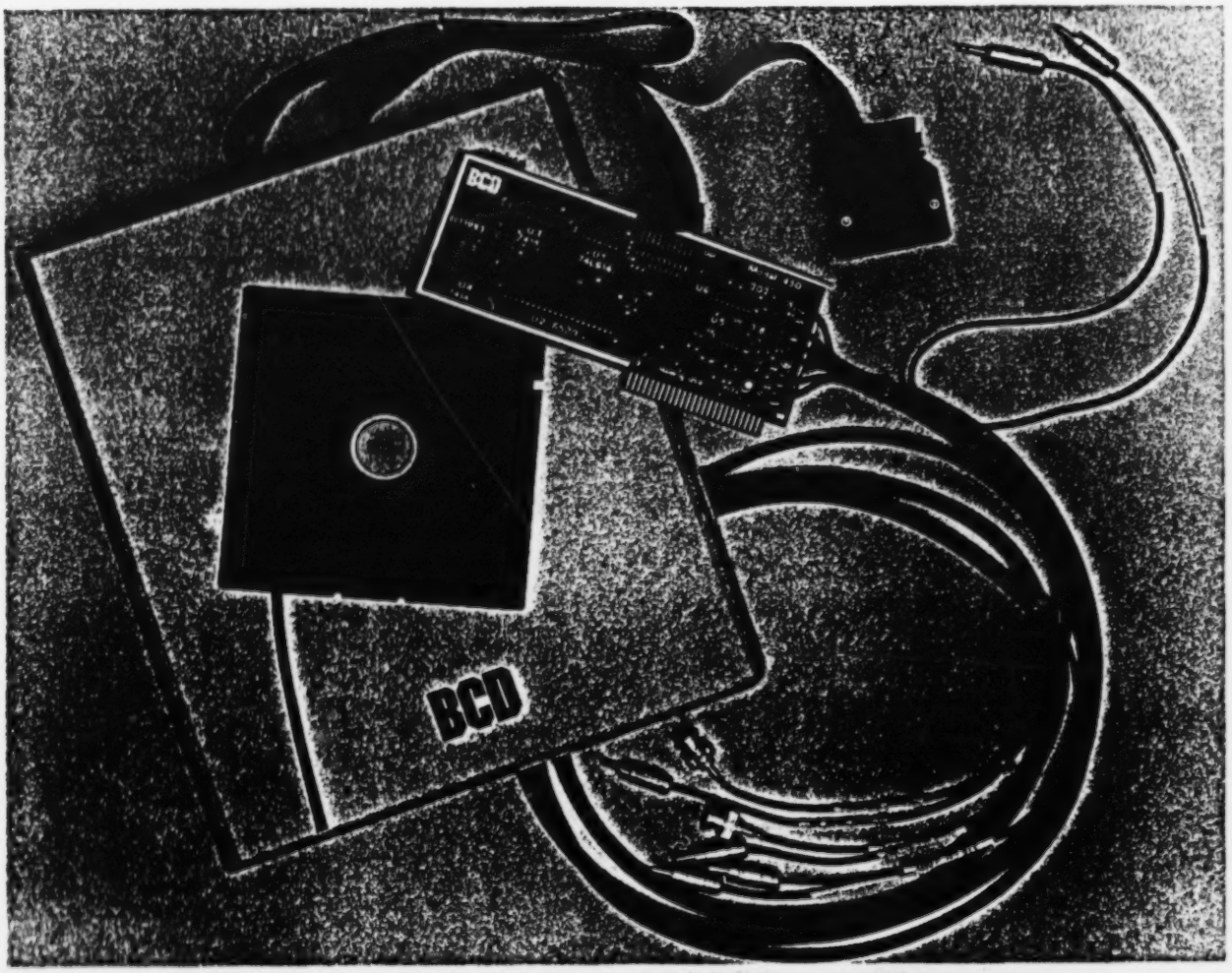
b) keyboard membrane, voice synthesizer

c) voice recognition, switches

d) light pen, CRT

Video continued "AD 377-415"	speech synthesis can be used as an inexpensive alternative to print or video output by visually impaired and blind students. It is also an option for nonreading students, or for students who learn better through an audio modality.
	Voice synthesized speech tends to be mechanical sounding at this time, but the technology is rapidly improving the voice output quality.
SOUND FROM VERT on Video	
Slide 63	Like other adaptive devices for the computer, voice or speech synthesis requires specific software that has been programmed to produce speech output.
Slide 64	In addition, specific hardware must be purchased. This normally includes a board to plug into the computer and a speaker box that may be located inside the computer or placed along side it.
Slide 65	This video has introduced some of the important input and output devices that have been developed to make the computer more accessible for handicapped students.
Slide 66	
Slide 67	Access to the computer by handicapped persons is important because the computer can be a significant teaching tool. It allows a handicapped student to communicate what he has learned. For many severely handicapped children, the ability to communicate is a new reality. The computer has become a social equalizer that allows nonvocal and physically impaired individuals to express their feelings, their thoughts, and their knowledge.
Slide 68	
Slide 69	
Slide 70	
Slide 71	
VIDEO GRAPHIC "Review"	Lets review the information on the video by answering some questions on the computer.
	END NARRATION - PAUSE

BCD Model 450 VTR Control Interface



The BCD Model 450 VTR Control Interface permits any Apple*II, II PLus or IIe computer to control industrial type Video Tape Recorders and/or Players with frame-accurate precision. The single board fits into a peripherial slot (typically #4) in the computer, and includes all required video, audio and VTR control cables.

The BCD 450 has solid state Video/Audio Switching to display composite video from either the computer or the VTR.

The BCD Model 450 and Standard Software permit encoding Absolute Frame Addressing of video tape for Frame-Accurate tape positioning.

The Standard Software includes the Logger I utility for defining "In" and "Out" points of scenes and saving the file to disk. Additionally, OPSUBS (OPerational SUBroutineS) provides all the BASIC subrouties required for integrating precision VTR control into your custom BASIC programs. Drivers for Pascal are available at additional cost.

Applications for precision random access video tape include Education, Training, Point-Of-Purchase and a multitude of other image storage/retrieval uses including X-Ray and museum filing.

Print of lesson HELLO

```
r:HELLO              12-85          MAH, WAC
r:PROGRAM NAME    REVISION DATE     AUTHORS
r:
r:
r:====================================
r:                PURPOSE
r:====================================
r:
r:FDLRS Network
r:Pilot Interactive Video Project
r:
r:====================================
r:         LABELS AND VARIABLES
r:====================================
r:
r:  Intro  - Welcome Participant to
r:           Program
r:  Begin  - Lesson Beginning Mechanism
r:  Begin1 - Restart of Section
r:  Color  - Determine Type of Monitor
r:           Being Used
r:  Color1 - Set Colors
r:  Sec1   - First Section
r:  Sec2   - Second Section
r:  Sec3   - Third Section
r:  Sec4   - Last Section
r:  A's    - Questions in the First
r:           Section
r:  B's    - Questions in the Second
r:           Section
r:  C's    - Questions in the Third
r:           Section
r:  D's    - Questions in the Last
r:           Section
r:  Score  - Score Questions
r:  Next   - Interpret Score
r:  Test1  - Evaluation of Score
r:           3/3 Correct
r:  Test2  - Evaluation of Score
r:           2/3 Correct
r:  Retest - Evaluation of Score
r:           Less than 2 Correct
r:  Wait   - Wait for Participant To
r:           Continue
r:
r:
r: Variables
r:
r:
r:  n$     - Name of Participant
r:  s      - Number of Questions
r:           Answered Correctly
r:  p      - Background Color
r:  p1     - Foreground Color
r:
```

```
r:=====================================
r:           SET INITIAL VALUES
r:=====================================
r:
r:
r:
r:
d:n$(50)
c:s=0
c:p=0
c:p1=2
V:slot4
V:aud2
V:init
V:pro1120
r:
r:
r:=====================================
r:           MONITOR
r:=====================================
r:
v:find XXXX (frame number)
v:plyb XXXX (play to frame number)

r:
ts:v0,39,9,23
t:Are you using a color monitor?
t:
t:Type Yes or No and press the
t:
t:          RETURN key.
t:
t:
ax:
m:yes
jy:Color1
jn:Intro
r:
r:
*Color1
r:
ts:b(p)
ts:f(p1)
r:
r:
r:
```

```
r:====================================
r:                INTRODUCTION
r:====================================
r:
*Intro
r:
ts:es;s2;t1
ts:v0,39,7,23
t:WELCOME TO THE WORLD
t:
t:         of
t:
t:ADAPTIVE PERIPHERALS
w:8
ts:v;es;s1;t1
t:
t:
t:
t:  Please type your name and press
t:
t:           the RETURN key.
t:
ts:v2,39,8,23
a: $n$
c:/n$ c
ts:v2,39,8,23
j(n$=""):@a
t:
t:
t:
t:Welcome to the lesson, $n$ .
t:
t:This is a tutorial program on
t:
t:adaptive computer devices for
t:
t:handicapped students.
t:
ts:v7,39,21,23
t: PRESS ANY KEY TO CONTINUE
t:
w:500
*Halt j(key(1)=0):Halt
r:
r:====================================
r:                BEGIN
r:====================================
r:
*Begin
r:
r:
ts:v;es
ts:v0,39,9,23
t:You will now answer three questions
t:
t:on the material that has just been
t:
t:presented to you.
ts:v7,39,21,23
t:Press Any Key To Continue
w:600
```

```
*Halt(key(1)=0):Halt
j:Sec1
r:
r:
*Begin1
r:
r:

ts:v0,39,9,23;es
t:Video Rewinding
t:
t:Please wait.
v:find XXXX (frame number)
v:plyb XXXX (play to frame number)
r:
r:
c:s=0
ts:v;es
ts:v0,39,9,23
t:You will now answer three questions
t:
t:on Section One again.  Read each
t:
t:question carefully and select the
t:
t:best answer.
ts:v7,39,21,23
t:PRESS ANY KEY TO CONTINUE
w:600
*Halt(key(1)=0):Halt
r:
r:====================================
r:           SECTION 1
r:====================================
r:
*Sec1
r:
ts:v;es
r:
r:
r:
*A1
r:
r:
r:
r:
pr:1
t:
t:The purpose of this video is to
t:
t:a)  demonstrate that severely
t:    handicapped students cannot
t:    use a computer.
t:
t:b)  demonstrate how difficult it is
t:    to set up computer access by
t:    handicapped students.
t:
t:c)  demonstrate how computers make
t:    students' lives easier.
```

```
t:
t:d)  demonstrate some of the alternate
t:    input and output devices that can
t:    be used by handicapped students.
t:
as:
t:
m:d
t:
ty:Very Good $n$ !
uy:Score
uy:Wait
jy:A2
tn2:No, the correct answer is d.
tn2:
un2:Wait
jn2:A2
tn:No, try again.
un:Wait
ts:v0,39,18,23:es
jn:@a
r:
r:
r:
*A2
r:
r:
r:
r:
ts:v:es
t:
t:
t:What is the primary purpose of the
t:keyboard membrane?
t:
t:a)  to allow for easy typing by user.
t:
t:b)  to protect the keyboard from
t:    liquids.
t:
t:c)  to protect the keyboard from
t:    dust.
t:
t:d)  to allow only strong, healthy
t:    students to use the keyboard.
t:
as:
t:
m:b
t:
ty:Excellent $n$ !
uy:Score
uy:Wait
jy:A3
tn2:
tn2:No, the answer is b.
un2:Wait
jn2:A3
tn:No, try again.
```

```
un:Wait
ts:v0,39,16,23;es
jn:@as
r:
r:
r:
*A3
r:
r:
r:
r:
ts:v;es
t:
t:
t:A template
t:
t:a)  protects the keyboard from
t:    uncontrolled movement.
t:
t:b)  allows handicapped students to
t:    rest their hands on the keyboard.
t:
t:c)  can be custom designed.
t:
t:d)  all of the above.
t:
t:
as:
t:
m:d
t:
ty:Super Job $n$ !
uy:Score
uy:Wait
jy:Next
tn2:
tn2:No, the correct answer is d.
un2:Wait
jn2:Next
tn:No, try again.
un:Wait
ts:v0,39,15,23;es
jn:@as
r:
r:
r:=====================================
r:           SUBROUTINE-SCORE
r:=====================================
r:
*Score
r:
r:
c:s=s+1
e:
r:
*Next
r:
j(s=3):Test1
j(s>1):Test2
j(s<2):Retest
r:
```

```
r:====================================
r:                TEST1
r:====================================
r:
*Test1
r:
gx:SMILE!
w:5
j:Sec2
r:
r:====================================
r:                TEST2
r:====================================
r:
*Test2
r:
ts:v;es
ts:v0,39,9,23
t:You did very well, $n$ !
t:
t:You got #s  right out of 3.
t:
t:You are now ready to go on to the
t:
t:next section.
t:
ts:v7,39,21,23
t:PRESS ANY KEY TO CONTINUE
w:600
*Halt j(key(1)=0):Halt
j:Sec2
r:
r:====================================
r:              RETEST
r:====================================
r:
*Retest
r:
ts:v;es
ts:v0,39,9,23
t:You need to review the material, as
t:
t:your score was #s  right out of 3.
ts:v7,39,20,23
t:PRESS ANY KEY TO CONTINUE
w:500
*Halt j(key(1)=0):Halt
t:
j:Begin1
r:
```

```
r:=====================================
r:             SECTION 2
r:=====================================
r:
v:find XXXX (frame number)
v:plyb XXXX (play to frame number)
*Sec2
c:s=0
ts:v;es
ts:v0,39,9,23
t:You will now answer the second set
t:
t:of three questions.
ts:v7,39,21,23
t:PRESS ANY KEY TO CONTINUE
w:600
*Halt j(key(1)=0):Halt
r:
ts:v;es
r:
r:
*B1
r:
r:
r:
r:
r:=====================================
r:               WAIT
r:=====================================
r:
*Wait
t:
ts:v7,39,21,23
t:
t:PRESS ANY KEY TO CONTINUE
*Halt j(key(1)=0):Halt
e:
r:
r:=====================================
```

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INFORMATION SHEET - INTERACTIVE VIDEODISC

Written by:

Barbara Allen, M.S. CCC-SP
Speech/Language Pathologist
815 Prescott Lane
Springfield, OR 97477

June 7, 1985

INTERACTIVE VIDEODISC NETWORKS BEING FORMED:

Phil Kessinger
International Council for Computers in Education
University of Oregon
1787 Agate Street
Eugene, OR 97403

Michael D. Uretz
Software Development Manager
Society for Visual Education, Inc.
1345 Diversey Parkway
Chicago, Illinois 60614
(312) 525-1500, X210

PARTIAL LIST OF UNIVERSITIES ACTIVELY INVOLVED IN INTERACTIVE VIDEODISC DEVELOPMENT:

University of Nebraska - development of interactive videodiscs, training in production of videodiscs, yearly videodisc symposium, free newsletter:

Nebraska Videodisc Design/Production Group
P.O. Box 83111
Lincoln, NE 68501
(402) 472-3611

Utah State University - Produces interactive programming for vidediscs (has produced programs specifically for special ed)

Utah State University
Interactive Videodisc for Special Ed Technology Program
Logan UT 84332

Brigham Young University - Produces interactive instructional programming for videodiscs

David O. McKay Institute of Education
W-160 STAD
Provo, UT 84602

University of Washington - Produces interactive instructional programming for videodiscs

Health Sciences Center for Educational Resources
University of Washington
T262A Health Sciences Building, SB-56
Seattle, Washington 98195
(206) 545-1156

MANUFACTURERS OF VIDEODISCS PLAYERS:

Sony Video Communications
Sony Communications Products Company
Sony Drive
Park Ridge, NJ 07656

Pioneer
Industrial Sales Division
5150 E. Pacific Coast Highway, Suite 300
Long Beach, CA 90804
(213) 498-0300

Phillips
Philips Subsystems and Peripherals, Inc.
100 E. 42nd Street
New York, NY 10017
(212) 850-5011

MAIL-ORDER SUPPLIERS OF DISCS:

The Instant Replay (send $3.00 for color catalogue - 1400 titles)
479 Winter Street
Waltham, MA 02154-1216
phone: (800) VHS-DISC

Starship Audio-Industries (free catalogue - 1000+ titles)
605 Utterback Store Road
Great Falls, Virginia 22066
phone: (703) 430-8692

MANUFACTURERS OF INTERFACES:

Allen Communication
140 Lakeside Plaza II
5225 Wiley Post Way
Salt Lake City, Utah 84116
(801) 539-7800

Whitney Educational Services
1777 Borel Place, Suite 416
San Mateo, CA 94402
(415) 341-5818

JOURNALS RELATED TO INTERACTIVE VIDEO:

Videodisc and Optical Disk
Meckler Publishing, 11 Ferry Lane West, Westport CT 06880

Video Computing
P.O. Box 3415, Indialantic, FL 32903 phone (305) 768-2778

UPCOMING CONFERENCES ON INTERACTIVE VIDEO

Seventh Annual Conference on Interactive Videodisc in Education and Training, J.W. Marriott Hotel, Washington, DC, August 19-23, 1985. Info: (703) 347-0055. Sponsor: SALT, 50 Culpepper St., Warrenton, VA 22186.

Nebraska Videodisc Symposium, Nebraska Center for Continuing Education and The Cornhusker Hotel and Convention Center. Sponsor: Videodisc Design/Production Group, KUON-TV/University of Nebraska-Lincoln, P.O. Box 83111, Lincoln, NE 68501-3111. (402) 472-3611.

VIDEODISC STATISTICS:

- can contain 110,000 pictures, which is equal to the contents of 1100 carousels. Shelf space for the carousels would be the length of a football field. Were one to view each picture for 5 seconds, one would watch pictures continuously for 6 days and 8 hours.

- is capable of containing 120 hours of radio quality sound. 120 hours would be the equivalent of 5 days of continuous listening. 120 hours would mean all frames would be used for sound. Were one to record 75 hours of sound, there would be 27,000 still frames remaining to be used.

- can show 1 hour of motion picture.

- produces 1 hour of high quality stereo sound - or 2 channels for different messages (English/Spanish, different levels/types of instruction)

- stores the equivalent of the data contained on 1,000 floppy discs.

- two types of laser videodiscs are available - CLV and CAV. CAV is the one which can be used interactively.

- accessory devices can include a touch screen, light pen, mouse, graphic overlay and bar code reader.

- The disc can take much more abuse than floppy discs or long playing records. They are projected to last for century!

- Pioneer advertises that the videodisc provides 40% greater clarity of picture than videotape.

- cost of an industrial videodisc player is less than $1000. Interfaces vary from $150 upwards. Discs can be purchased generally for $30 to $400.

EFFECTIVENESS OF INTERACTIVE VIDEO:

- Weyerhauser has studied the efficacy of using interactive videotape instruction vs. the traditional methods of instruction. They found that there was a 50% increase in learning and 50% decreased training time.

- Digital Equipment Corporation reports that students retain 23% of what they hear, 43% of what they see and hear and 70% of what they see, hear and do with interactive video.

- Clark Equipment shows that interactive video programs result in 26% higher recall 95% of the time. Training takes 1/3 less time than their traditional training methods.

- UCLA found that Level II videodisc instruction was superior to non-interactive videotaped instruction used in their science departments.

- The University of Nebraska used interactive video as an alternative model for doing science experiments. The Biology department reported 10% less lab time to learn the same material. Chemistry experiments required 65% less lab time. Students who used interactive video did significantly better on one chemistry test, and showed no significant difference on another test when compared to the control group.

LEVELS OF INTERACTIVITY: (terminology developed by the University of Nebraska at Lincoln)

Level 1 - By using remote control, one can:

- stop action to ask the class to study a certain aspect of the motion sequence
- remove the picture from the screen to maintain the attention of the class when interjecting a comment
- review a sequence
- edit portions unnecessary for instruction to save class time
- run the video in any of several slow motion speeds to add clarity to an action
- show any of 55,000 still pictures within 6 seconds after punching in a number on the remote control pad

Level 2 - using built-in computer on industrial player

Level 3 - using microcomputer to control industrial player

Level 4 - state of the art and beyond

APPLICATIONS FOR VIDEODISCS IN SPECIAL EDUCATION:

Education Turnkey Systems published a report called "Videodiscs in Special Education" in April, 1983. See your reference sheet for their address. They reported that videodiscs in education offer a number of potentially useful applications including:

1. visual reference materials
2. teacher in-service materials
3. instructional programming
4. teacher continuing education
5. information storage and retrieval

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SELF-INSTRUCTIONAL PACKET

INTRODUCTION TO COMPUTER HARDWARE AND SOFTWARE

Florida Diagnostic and Learning Resources System
FDLRS/Alpha
7061 Garden Road
Riviera Beach, FL 33404
(305) 845-6009

This product was developed through the Instructional Technology Services Grant awarded to Palm Beach County, on behalf of FDLRS/Alpha Associate Center serving Palm Beach County. The Instructional Technology Services Grant is funded through Federal Assistance for the Education of the Handicapped, P.L. 91-230, EHA, Part B, to provide instructional technology support services to exceptional student education programs. The Florida Diagnostic and Learning Resources System (FDLRS) is funded through Federal Assistance for the Education of the Handicapped, P.L. 91-230, EHA, Part B, and State Assistance through General Revenue appropriations to provide diagnostic and instructional support services to Florida's exceptional student education programs, statewide.

TABLE OF CONTENTS

I.	Proposed Minimum Student Performance Standards
II.	History and Social Impact of Computers
III.	Parts of the Computer (Hardware)
IV.	Computer Programs (Software)
V.	Software Evaluation
VI.	BASIC Programming
VII.	Copyright
VIII.	Glossary
IX.	Bibliography of Materials on Computer Literacy

I. PROPOSED MINIMUM STUDENT PERFORMANCE STANDARDS ON COMPUTER LITERACY

Carefully read through the proposed Florida Minimum Student Performance Standards on Computer Literacy.

Place a * (star) by those skills with which you are not familiar.

This Packet will provide you with some of the information contained in the proposed Florida Minimum Student Performance Standards on Computer Literacy.

If you need additional information, contact your FDLRS Center or locate one or more of the resources in the Bibliography.

Standard: A. THE STUDENT WILL OPERATE A COMPUTER FOR AN INSTRUCTIONAL PURPOSE BY LOADING AND RUNNING PROGRAMS.

Skill: THE STUDENT WILL:

	3	5	8	11
1. Locate and/or use keys or other input devices necessary to interact with computer applications appropriate for the grade level.	X	X	X	X
2. Demonstrate the power up and power down sequence for an available computer system.	X			
3. Execute a program which is: a. automatically loaded b. selected from a menu c. independently selected, loaded and run	X	X	X	
4. Indicate proper care and user responsibility for operating a computer system: a. the basic hardware (e.g., keyboard, monitor, tape/disk unit b. peripheral hardware (e.g., graphics tablet, joysticks) c. additional peripheral hardware (e.g., printer, modem)	X	X	X	
5. Indicate the proper techniques for care and handling of computer storage media.		X		
6. Identify the purpose of error messages.		X		
7. Identify the purpose of creating a back-up copy of a computer program.				X
8. Identify the purpose and use of program documentation.				X
9. Identify the purpose of initializing/formatting a storage medium.				X

Standard: B. THE STUDENT WILL UNDERSTAND THE FUNCTION OF THE BASIC PARTS OF A COMPUTER.

Skill: THE STUDENT WILL:

		3	5	8	11
1.	Identify these functions of a computer system: input, output, storage, processing.		X		
2.	Define the function of these parts of a computer system: input device, output device, internal memory, and central processing unit.			X	
3.	Identify the sequential flow of data through a computer system: (input, through processing, to output).			X	
4.	Identify the purpose of the following devices:				
	a. keyboard	X			
	b. Monitor/T.V.	X			
	c. joystick/paddle	X			
	d. printer		X		
	e. speaker		X		
	f. tape/disk units		X		
	g. graphics tablet		X		
	h. voice recognition system			X	
	i. modem			X	
	j. synthesizer			X	
5.	Identify the need for an external storage device			X	
6.	Distinguish between RAM (Random Access Memory) and ROM (Read Only Memory) and their usage.				X

Standard: C. THE STUDENT WILL UNDERSTAND THE ROLE AND FUNCTION OF SOFTWARE AND LANGUAGES IN COMPUTER TECHNOLOGY.

Skill: THE STUDENT WILL: PROPOSED

		3	5	8	11
1.	Identify the fact that a computer requires instructions to operate.	X			
2.	Identify a computer program as a sequence of instructions used by the computer to perform a task.		X		
3.	Identify the relationship between computer programs and computer languages.		X		
4.	Identify the fact that computer programs refer to software.		X		
5.	Identify the fact that software is machine specific.			X	
6.	Identify at least three (3) resources for obtaining computer programs.			X	
7.	Identify a variety of media on which software is stored, including hardcopy, disk, tape and cartridge.			X	
8.	Identify at least three (3) computer languages and an appropriate application of each.				X
9.	Identify the fact that software is operating system specific.				X
10.	Identify the fact that operating systems and applications programs are software.				X
11.	Identify at least one function of an operating system.				X
12.	Identify at least one advantage and one disadvantage of software-stored on each medium, including hardcopy, disk tape, cartridge.				X

Skill: EDITORIAL NOTE: (NOT TO BE USED AS A SINGLE SKILL; to be included in a suplemental vocabulary list.)

The student will demonstrate a knowledge of basic vocabulary associated with software and languages as determined by a specific list appropriate for the grade level: B-3

PROPOSED

Standard: D. THE STUDENT WILL RECOGNIZE THE IMPACT OF COMPUTER TECHNOLOGY IN SOCIETY AND THE NEED FOR ITS ETHICAL USE.

Skill: THE STUDENT WILL:

	3	5	8	11
1. Identify three (3) examples of computer application in each of the following areas: a. home b. school c. recreation		X		
2. Provide an example of a computer application in at least five (5) of the following areas. a. medicine and health care b. education and training c. law enforcement and criminal justice d. engineering and design e. business and banking f. the office g. transportation and traffic control h. defense systems i. the home j. recreation and entertainment k. government and politics l. weather prediction m. the library n. manufacturing o. the creative arts p. publishing q. public utilities - telephone and power plants				X
3. Identify careers that deal with computer hardware, software and other computer-related areas.			X	
4. List at least three (3) positive and three (3) negative effects that computerization has on the job market.				X
5. Identify three (3) positive and three (3) negative effects that computerization has on our daily lives.			X	
6. Identify at least 2 ways that computers and computer applications may have a major impact on the way people live, work and play in the future.				X
7. Identify an appropriate strategy for correcting errors generated by an automated data processing system, such as a billing error or student grade report errors.				X
8. Identify the fact that laws affect the use, access and distribution of electronic information.		X		
9. Distinguish between legal and illegal duplication and distribution of software.			X	

Standard: D. (cont') THE STUDENT WILL RECOGNIZE THE IMPACT OF COMPUTER TECHNOLOGY IN SOCIETY AND THE NEED FOR ITS ETHICAL USE.

Skill: THE STUDENT WILL:

		3	5	8	11
10.	Identify legal ramifications of computer crime.			X	
11.	Describe at least one advantage and one disadvantage of a data base containing personal information on a large number of people.				X

STANDARD OF EXCELLENCE: The Student will demonstrate a recognition of future change in technology.

PROPOSED

PROPOSED

Standard: E. THE STUDENT WILL UNDERSTAND THE CAPABILITIES AND APPLICATIONS OF VARIOUS COMPUTERS AND COMPUTER SYSTEMS.

Skill: THE STUDENT WILL:

	3	5	8	11
1. Classify a given device as a computer terminal or a stand-alone computer.			X	
2. Identify the meaning of artificial intelligence as it relates to computing.			X	
3. Classify a given device as a special purpose or general purpose computer.			X	
4. Distinguish between a micro-computer and a mainframe computer using the following characteristics: a. Initial cost b. Portability c. Process speed d. Peripheral support				X
5. Identify the following activities as the major types of computer applications: a. Instruction b. Recreation c. Computation d. Word processing e. Information storage and retrieval f. Simulation g. Data processing h. Robotics/Process control i. Decision making j. Telecommunications k. Modeling	 X X	 X X	 X X X	 X X X X
6. List the three (3) ways that computers improve the performance of a certain task (i.e. speed, accuracy, control and/or repeated operations).			X	
7. Decide whether use of a computer would be advantageous to perform a given task.				X
8. Select one of the following types of application programs as appropriate to solve a given task: a. Information storage and retrieval b. Computation c. Data processing d. Word processing e. Instruction f. Recreation g. Telecommunications h. Decision making				X

STANDARD OF EXCELLENCE: Expand on concepts of robotics, telecommunications and artificial intelligence.

Standard: F. THE STUDENT WILL UNDERSTAND THE PROCESS OF PROGRAMMING

Skill: THE STUDENT WILL:

	3	5	8	11
1. Identify the purpose for which programs are written.		X		
2. Identify the problem to be solved in a given situation.	X	X		
3. Identify the problem to be solved by a computer program for a given real-world situation.			X	X
4. Follow a logical sequence of instruction to solve a real-world problem situation.	X	X	X	X
5. Determine a logical sequence for a given set of instructions to solve a problem situation.	X	X	X	X
6. Specify steps to a solution given a task that requires a number of steps.	X	X	X	X
7. Predict the outcome of a logical sequence of instructions with no decision-making points.		X		
8. Predict the outcome of a logical sequence of instructions that includes two decision-making points.			X	
9. Predict the outcome of a logical sequence of instructions that includes at least three (3) decision-making points.				X
10. Debug a set of simple instructions by determining whether information is sufficient or insufficient to solve the problem.			X	
11. Debug a set of simple instrucitons which contain extraneous information.				X
12. Arrange in a logical sequence these steps in the process of programming: a. Define and analyze the problem. b. Determine the logical steps required to solve the problem. c. Place the steps in logical sequence.. d. Code the steps in the appropriate programming language. e. Debug the program. f. Complete the documentation.				X

II. HISTORY AND IMPACT OF COMPUTERS

From the study sheets and glossary provided, answer the following questions. When you have completed the questions, check your answers with the answer key.

TRUE OR FALSE

1. Hollerith invented the first machine capable of being called a computer.

2. The first generation of computers used vacuum tubes.

3. Digital developed the first large-scale computer designed for business purposes.

4. Computers are now being designed that have the ability to carry out functions normally performed by the human brain.

5. Jacquard was the first to use punched cards to program a computer.

6. The BASIC programming language was developed before FORTRAN.

7. The 2nd and 3rd generations of computers moved from integrated circuits to transitors.

8. The advent of the home computer began in 1975.

9. The inventions of the typewriter and telephone effected the development of the computer.

10. The use of FORTRAN helped programmers who no longer had to code only in numbers.

List ten (10) common places, items or pieces of equipment that are computers.

1. telephone
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

HISTORY OF COMPUTERS

8000 B.C.	First evidence of recorded counting
3000 B.C.	Abacus invented - the first mechanical aid to computation
1622 A.D.	Oughtred's slide rule: first working change in computational methods
1642	Pascal: first mechanical calculating machine
1725	Bouchon: first use of punched paper for mechanism control
1801	Jacquard: first mechanism, a weaving loom, totally controlled by punched "program" cards
1812	Babbage: proposed first machine capable of being called a "computer". Mechanical, analytical engine with arithmetic/logic unit and limited memory.
1850	Hollerith: first use of punched card concept for the processing of numerical data (used to tabulate the census) Also invented a card sorter.
1867	Typewriter invented.
1876	Telephone invented.
1927	First electronic transmission (the beginning of TV)
1938	Shannon: first proposed linking Bollean algebra with switching circuits
1944	MARK I: First electromechanical computer
1945	Von Neumann: invented stored program concept
1946	ENIAC: First electronic computer used 18,000 vacuum tubes
1947	Shockley et.al.: first transistor developed.
1950's	**FIRST GENERATION OF COMPUTERS** - Electronic usage/vacuum tube
1955	IBM 702: First large-scale computer designed for business purposes
1957	FORTRAN developed. Reduced programming errors since programmers did not have to use machine language.
1959	**SECOND GENERATION OF COMPUTERS** - Used transistors.
1963	BASIC developed.

1965	**THIRD GENERATION OF COMPUTERS** - Used integrated circuits
1968	*"Minicomputer" term coined*
1969	Microprocessors developed. Both arithmetic and logic circuits could now be placed on the same chip.
1975	Altair - First microcomputer developed.
1975	First computer store opened.
1977	TRS80, PET, Apple microcomputers introduced.
1971	**FOURTH GENERATION OF COMPUTERS** - Very large scale integrated circuits and bubble memory.
1980's	**FIFTH GENERATION OF COMPUTERS** - Artificial intelligence. (i.e. The ability of the computer to carry out functions normally performed by the human brain.)

ADDITIONAL READING

Naisbitt, John. Megatrends. Warner, 1982
- Chapter 1. Industrial to Information Society
- Chapter 2. Forced Technology to High Tech/High Touch
- Chapter 3. National Economy to World Economy
- Chapter 4. Short Term to Long Term
- Chapter 5. Centralization to Decentralization
- Chapter 6. Institutional Help to Self-Help
- Chapter 7. Representative Democracy to Participatory Democracy
- Chapter 8. Hierarchies to Networking
- Chapter 9. North to South
- Chapter 10. Either/or to Multiple Options

Papert, Seymour. Mindstorms: Children, Computers, and Powerful Ideas. Basic Books, Inc., 1980.
Presents an exciting vision of education for the future - collaboration between computers and children.

Toeffler, . Future Shock and The Third Wave
Predictions of what life may be like in the future.

The Palm Beach County School System Professional Library with Johanna Sheehy, Librarian has a wide range of resources available for checkout to school personnel. These include ERIC documents, periodicals, books and a TRS color computer.

III. PARTS OF THE COMPUTER (HARDWARE)

Use the following study sheets and glossary to answer the questions. When you have completed the questions, check your answers with the answer key.

Identify the four major parts of the microcomputer. Define each term.

keyboard _____

CPU _____

monitor or video screen display _____

disk drive _____

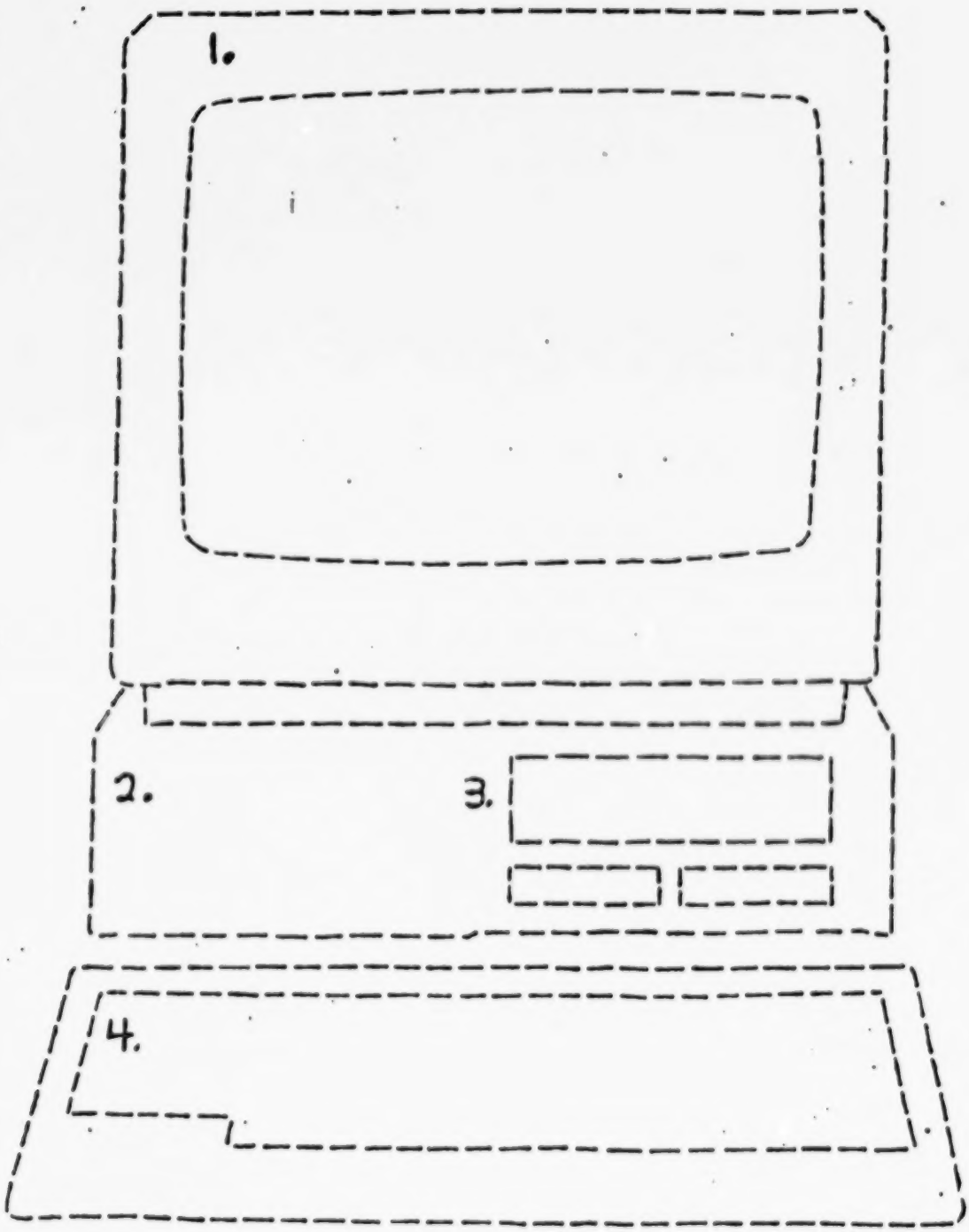
The CPU has three (3) major parts. Identify them.

What is the difference between RAM and ROM?

From the list of INPUT DEVICES, identify the <u>most common</u> device used to input information into the computer.

From the list of OUTPUT DEVICES, identify the <u>two most common</u> devices to get information out of a computer.

When would you use the CONTROl, OPEN APPLE, and RESET keys together on an Apple keyboard?



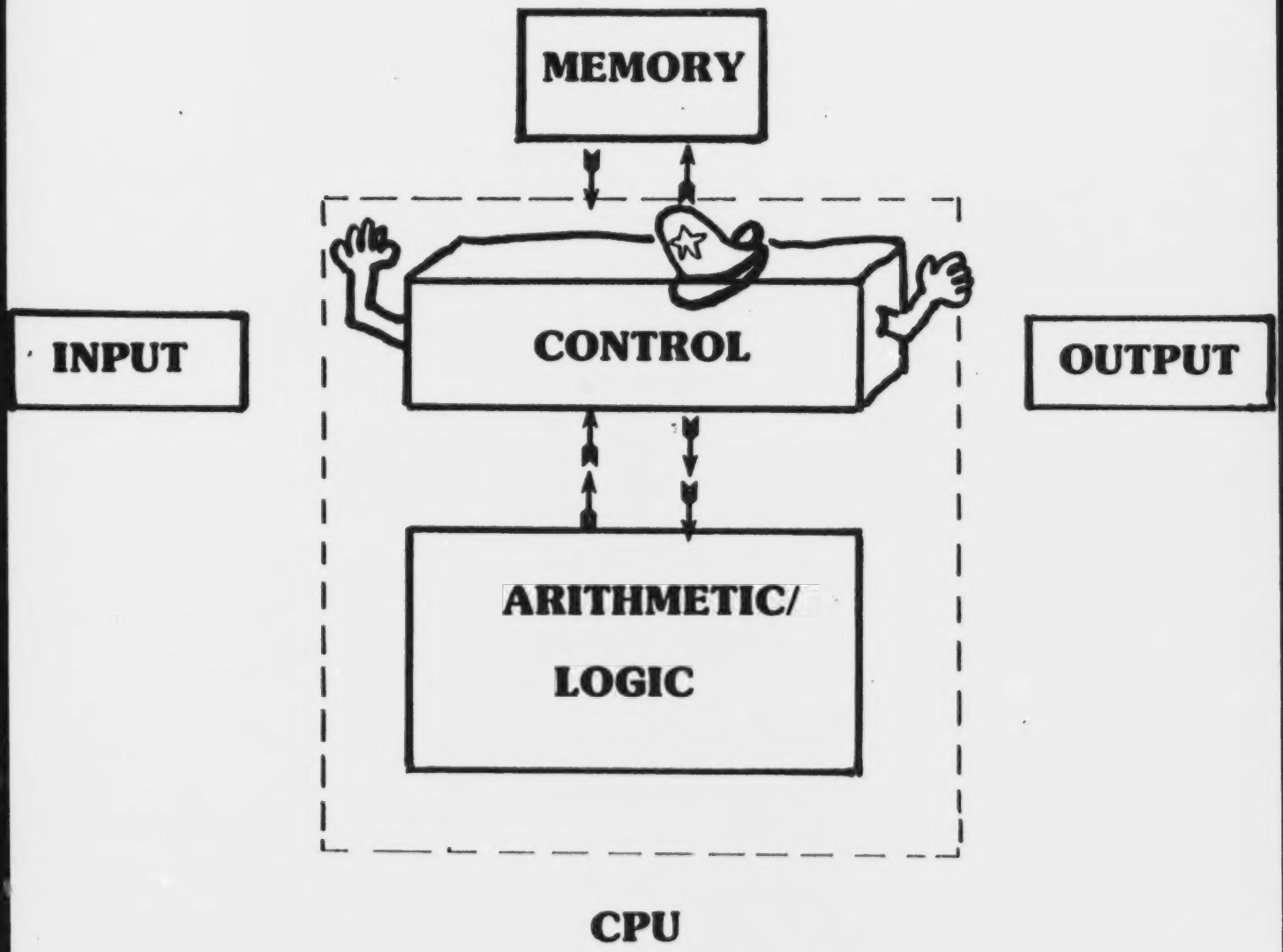
IDENTIFY THE MAJOR PARTS OF THE COMPUTER.

1. _____

2. _____

3. _____

4. _____


MEMORY
INPUT
CONTROL
OUTPUT
ARITHMETIC/
LOGIC
CPU

STORAGE DEVICES

PRIMARY MEMORY
- Random Access Memory (RAM)
- Read Only Memory (ROM)

SECONDARY MEMORY
- Cassette tape
- Floppy disk
- Hard disc
- Cartridge

PRINTERS

IMPACT
- Dot Matrix
- Formed character
- Line printer

OTHERS
- Thermal
- Electrostatic
- Ink jet
- Laser
- Chemical
- Photo copy

INPUT DEVICES

Switches
Punched cards
Paper tape
Mark sense card
Magnetic strip
Optical character
Keyboard
Light pen
Digitizer (Graphics tablet)
Touch sensitive terminal
Voice recognition
Bar code

OUTPUT DEVICES

Lights
Digital display
Teletype
Video
Plotter
Printer
Voice Response Unit

QUESTIONS FOR THE SALESMAN

Here are some of the questions you may want to take with you when you start shopping for microcomputers. They were freely adapted from a similar list in Microcomputers in Education by Joiner et. al.

1. What components do I need to make the system run?

2. Which of those components are a standard part of the system and which do I need to purchase separately? (Make sure the vendor includes all cables and interfaces.)

3. What storage devices are available - floppy disk, hard disk, cartridge, cassette tape.

4. Can random access memory (RAM) be added to the system later if needed? What is the approximate cost?

5. Are operator's and instructional manuals included? Are these manuals written clearly?

6. What are the conditions of the warranty provided by the manufacturer?

7. What peripherals applicable to exceptional education are available for the system, such as hand controls, speech synthesizers, light pens, mouse, voice input? Are any of these peripherals included with the system or must they be purchased at extra cost?

8. If you are considering a printer, is the printer set up for parallel or serial interface? What interface is on the computer? Is there an additional charge for the interface? Is the printer a standard type that can be used with a number of different computers, or only with the vendor's product?

9. Does the system have special environmental requirements, such as temperature and humidity control?

10. Where is service on the system available? How long does it usually take to get service and have repairs performed?

11. Does the vendor provide any staff training and are there charges for this service?

12. Does the vendor support a toll free "hot line" for problem solving?

13. Has the vendor sold the system for any educational setting in the area? If so, where?

14. What software is offered by the vendor as part of the system?

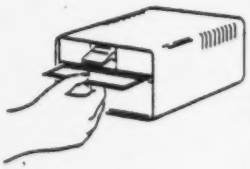
Instruction Cards --Apple IIe

Place instruction cards for power-up, restarting, and power-down procedures beside the computer.

Directions: Reproduce copies of these instruction cards and mount on card stock. Laminate the cards, cut out, and keep beside the computer as reminders

APPLE IIe

DIRECTIONS FOR LOADING AND RUNNING A PROGRAM



How to Insert a Floppy Disk

1. Discharge static electricity from your clothes and body by touching the metal plate near the power switch.
2. The disk drive's red IN USE light must be off.
3. Holding the floppy disk by the label only, insert it (label up) into the disk drive.
4. The CAPS LOCK key must be in its down position.
5. Turn on the monitor.
6. Turn on the computer power switch located on the left rear corner of the case.
7. The computer will BEEP. The power indicator on the keyboard and the red IN USE light on the disk drive will light up.

FDLRS/Westgate

Instruction Cards designed by Glenna Sirmans; Cordova Park Elementary School

D-6

APPLE IIe

DIRECTIONS FOR RESTARTING THE COMPUTER
(POWER ALREADY ON)

1. Discharge static electricity from your clothes and your body by touching the metal plate near the power switch.
2. The disk drive's red IN USE light must be off.
3. Remove the floppy disk from the drive and return it to its envelope.
4. Holding the next floppy disk by the label only, insert it (label up) into the disk drive.
5. The CAPS LOCK key must be in its down position.
6. Press and hold down the OPEN-APPLE key. Press CONTROL-RESET and then let go. Finally, let go of the OPEN-APPLE key.
7. The computer will BEEP. The disk drive's red IN USE light will come on.

APPLE IIe

WHEN YOU ARE FINISHED:

1. Discharge static electricity from your clothes and body by touching the metal plate near the power switch.
2. Turn off the computer power switch located on the left rear corner of the case.
3. Turn off the monitor.
4. Remove the floppy disk from the disk drive and return it to its envelope.

IV. COMPUTER PROGRAMS (SOFTWARE)

Use the following study sheets and glossary to answer the questions. When you have completed the questions, check your answers with the answer key.

Identify the parts of the floppy disk.

What is the "thumb rule"? (See Floppy Disk Handling and Storage, #1)

List six (6) things that can damage a floppy diskette.

Define each of the following terms:

CAI

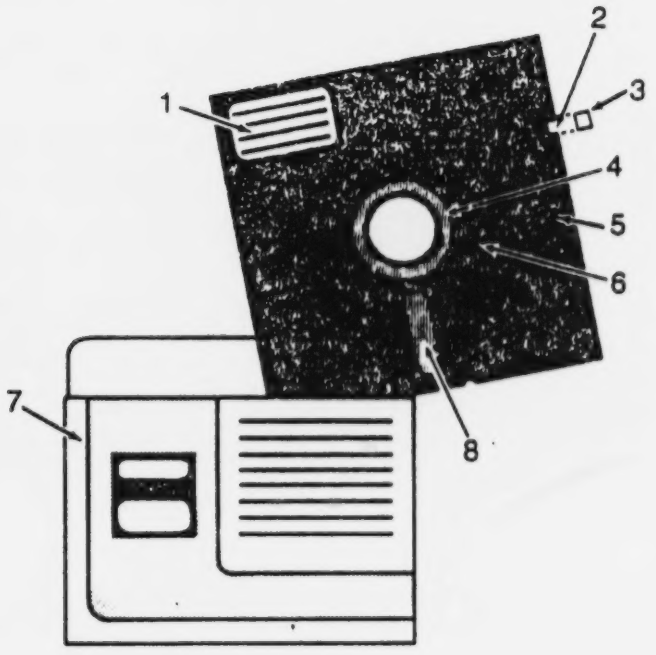
simulation

drill and practice

CMI (computer managed instruction)

tutorial

DISKETTES



1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

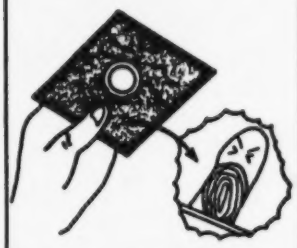
ANSWERS:
1. Label
2. Write Protect Notch
3. Write Protect Tab
4. Drive Hole/Diskette
5. Jacket
6. Sector Hole
7. Storage Envelope
8. Read/Write Window

E-2

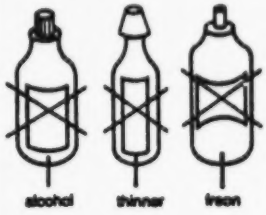
Floppy Disk Handling and Storage

Handling precautions to protect against possible failure

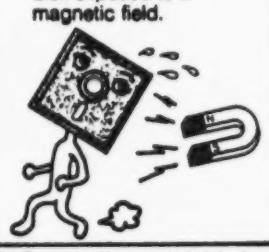
1. Do not touch disk surface. It is easily contaminated, which causes errors.



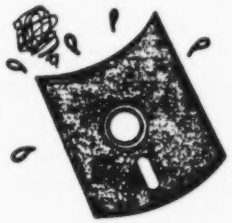
2. Do not use alcohol, thinners or freon to clean disk.



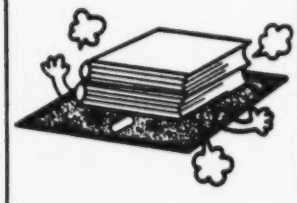
3. Do not use magnets or magnetized objects near the disk.
Data can be lost from a disk exposed to a magnetic field.



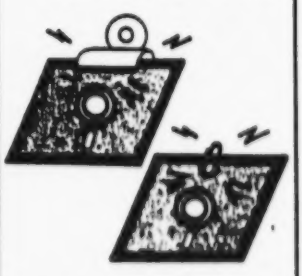
4. Do not bend or fold the disk.



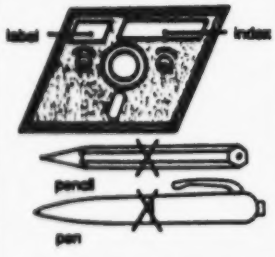
5. Do not place heavy objects on the disk.



6. Do not use rubber bands or paper clips on the disk.

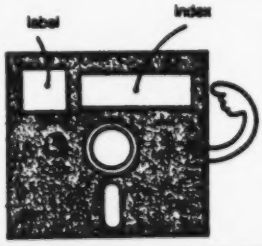


7. Do not write on disk label with pencil or ball-point pen. Use felt-tip pen only.

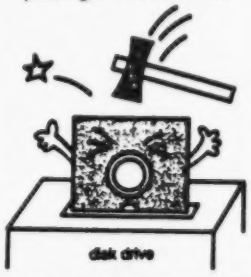


8. Do not use erasers on disk.

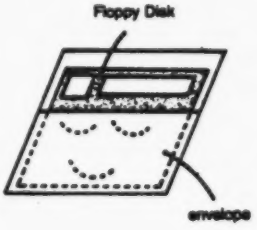
9. Apply index label to the right of label.
Do not use labels in layers.



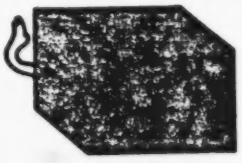
10. Insert carefully, by grasping upper edge and placing it into the drive.



11. Keep disk in its protective envelope when not in use.

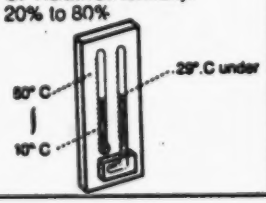


12. Disks not being used should be stored vertically in their box.

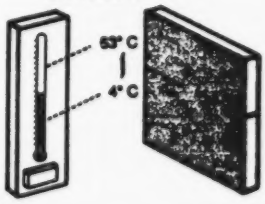


13. Do not expose the disk to excessive heat or sunlight.

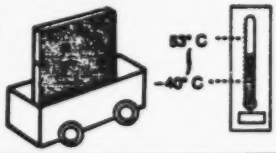
14. Operating environment:
A. Temperature: 10°C to 50°C (50°F to 122°F)
B. Wet Bulb Temperature: Less than 29°C
C. Relative Humidity: 20% to 80%



15. Storage environment:
A. Temperature: 4°C to 53°C (40°F to 127°F)
B. Relative Humidity: 8% to 80%



16. While in transit the disk should be in its envelope in a protective box within the following ranges:
A. Temperature: −40°C to 53°C (−40°F to 127°F)
B. Relative Humidity: 8% to 90%



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E-5

TYPES OF SOFTWARE

DRILL AND PRACTICE

- Supplements Previous Instruction
- Develops Skills and Concepts
- Checks Student Performance

TUTORIAL

- Teaches Rules or Concepts
- Stand-Alone Instructional Unit
- Checks Student Performance

SIMULATION

- Diverse Environments
- Control of Variables
- Problem Solving

TOOL

- Efficiently Accomplishes Task
- Provides Alternative Method

DIAGNOSTIC/PRESCRIPTIVE

- Analyzes Skill Levels
- Suggests Appropriate Assignments

MANAGEMENT

- Facilitates Testing
- Manages Instruction

from: Microcomputers in Education
Scholastic, Inc.

COMPUTER ASSISTED INSTRUCTION (CAI)

ADVANTAGES

- The student is required to participate in the learning process.
- Repetition or a new approach is possible when the student fails.
- Branching techniques are available on an individual basis.
- Lessons may be changed when the student tires.
- A multi-sensory approach is provided.
- Relationships between sensory and symbolic aspects of learning are possible.
- Extrinsic and intrinsic rewards may be used.
- Immediate knowledge of results is possible.
- Immediate responses may be obtained for reinforcement purposes.
- Structured programs help make "transfer of learning" possible.
- Results of research studies indicate that students who use CAI statistically perform significantly better than those who do not.
- It can be used to teach a wide range of subject matter.
- Each student is treated as an individual, not as part of the total class i.e., individualized instruction.
- It provides the student with immediate reinforcement and feedback.
- It continually encourages the student to do his/her best i.e., positive reinforcement.
- All students quickly become fascinated by the computer, enjoy using it, and sometimes become addicted to "making the computer work" thereby increasing their attention and concentration span on instructional objectives.

COMPUTER-ASSISTED
INSTRUCTION (CAI)

COMPUTER-ASSISTED INSTRUCTION
IS A TEACHING PROCESS DIRECTLY
INVOLVING THE COMPUTER IN THE
PRESENTATION OF INSTRUCTIONAL
MATERIALS WHERE THE COMPUTER
WORKS INTERACTIVELY TO PROVIDE
AND CONTROL THE INDIVIDUALIZED
LEARNING ENVIRONMENT FOR EACH
INDIVIDUAL STUDENT.

DRILL AND PRACTICE

- REINFORCE LEARNING
- REPETITION

DRILL AND PRACTICE PROGRAMS ARE MOST APPROPRIATE WHEN:

- THE SUBJECT MATTER HAS TO BE MASTERED TO FACILITATE THE EFFECTIVE PERFORMANCE OF HIGHER LEVEL SKILLS
- AFTER THE CONCEPTS RELATED TO THE SKILL HAVE BEEN TAUGHT
- JUST PRIOR TO THE APPLICATION OF THESE SKILLS TO HIGHER SKILLS IN THE CURRICULUM HIERARCHY

TUTORIAL

THE PURPOSE OF THE COMPUTER ASSISTED TUTORIAL IS TO PRESENT TO THE STUDENT NEW OR PREVIOUSLY UNLEARNED MATERIAL IN AN INDIVIDUALIZED ONE-TO-ONE SITUATION AND REMEDIATE AS NECESSARY UNTIL LEARNING TAKES PLACE

SIMULATION

PERMITS STUDENT TO EXPERIENCE REAL-LIFE PROBLEM SOLVING SITUATIONS IN A LOW-COST LOW-RISK ENVIRONMENT

- COMPRESSES LONG TIME PERIODS OF REAL LIFE SITUATIONS INTO MINUTES AND HOURS
- REQUIRES ACTIVE PARTICIPATION BY THE LEARNER

PROBLEM-SOLVING

PROBLEM-SOLVING WITH THE PERSONAL COMPUTER REQUIRES THAT THE STUDENT PROGRAM THE COMPUTER TO SOLVE SPECIFIC REAL LIFE PROBLEMS. EXAMPLES OF PROBLEM SOLVING WITH THE COMPUTER INCLUDE:

- CALCULATING LOAN INTEREST
- PLOTTING EQUATIONS
- DRAWING GRAPHS
- PROJECTING PROFIT/LOSS MARGINS

AUTHORING SYSTEMS

- MEET THE INDIVIDUAL NEEDS OF THE STUDENT
- HAVE THE STUDENT RESPOND FREQUENTLY
- CHECK FOR INCORRECT AND CORRECT STUDENT RESPONSES
- BRANCH TO APPROPRIATE LEVELS OF DIFFICULTY TO AVOID BOREDOM OR FRUSTRATION
- USE COLOR, GRAPHICS, AND SOUND TO CONVEY INFORMATION
- REINFORCE STUDENTS AND DRAW ATTENTION TO IMPORTANT INFORMATION

COMPUTER-MANAGED INSTRUCTION

COMPUTER-MANAGED INSTRUCTION IS THE SYSTEMATIC CONTROL OF INSTRUCTION BY THE COMPUTER.

CHARACTERIZED BY

- TESTING
- DIAGNOSIS
- LEARNING PRESCRIPTIONS
- RECORD KEEPING

F-5

GAMING

- LEARNING AND ENJOYMENT
- EXHIBITING LOGIC AND SKILL
- TEAM GAMES REQUIRE COOPERATION AND SOCIALIZATION
- DEVELOP DECISION-MAKING AND PROBLEM-SOLVING SKILLS
- HELP TO IMPROVE A LEARNER'S ATTENTION SPAN
- RELEVANT AND FUN

V. SOFTWARE EVALUATION

1. List five things to look for when evaluating a software program for instructional integrity.

2. List five things to look for when evaluating a software program for technical quality.

TRUE OR FALSE

1. When testing a software program, be sure to get all answers correct.
2. It is most effective and efficient to evaluate many software programs in one day.
3. Try pressing keys randomly to crash the program.
4. Good computer use can result in improved student attitude.
5. You only need to run part of a software program to evaluate it.
6. Good CAI for regular education can also be used for exceptional students.
7. Your ergonomics can effect software evaluation.
8. The first consideration in selecting CAI to evaluate is if it is appropriate for the student's curriculum.
9. It is important to be able to escape out of the middle of a program.
10. The algorithm of a program is important.

GUIDELINES FOR EVALUATING SOFTWARE

Try operating the program without reading documentation to determine how much training would be necessary before a student could operate independently.

Work through the whole program. This includes trying each option on the menu.

Check how long it takes to run program.

Note effective response.

Try inappropriate responses. Press more than one key at a time. Hit space bar, respond with correct words instead of letter or number. In math, if several digit answer is required, enter a partial answer. If required to type in response, type in incorrect spelling. Try entering decimals, fractions, percentages in response to math problems.

Make a series of error responses. Note the results in the program.

Try to escape the program.

If the program has a management system, enter several students. Try to add a student, delete a student, delete a whole class etc. Note results.

Run the program using a student's name. Note if student records were stored properly in the management system.

Try to break out of the program; try pressing keys randomly and specific keys (such as BREAK, CLEAR etc.) which might cause a program to "crash".

Check response entry sequence to see if it matches the necessary algorithms.

Read documentation thoroughly.

Systematically look at each exceptionality to determine if the program might be used successfully.

Recognize that problems not suggested at the time of this review may occur. Document any problems with software and notify the publisher.

SOFTWARE QUALITY

1. EDUCATIONAL COMPATABILITY

Is It Appropriate For:

- The Task
- Student Needs
- Curriculm
- Teacher Needs

2. INSTRUCTIONAL DESIGN

Does It Have:

- Specific Objectives
- Accuracy
- Adequate Presentation
- Appropriate Response Mode
- Appropriate Feedback

3. TECHNICAL ADEQUACY

Does It Make Good Use OF:

- Computer
- Peripheral Devices

Is It :

- Crash Proof
- Free Of Bugs
- Flexible For Learner Needs

VARIABLES WHICH INFLUENCE EVALUATION

1. Time of day.
2. Length of time you spend on program.
3. Experience in evaluation.
4. Experience in exceptionalities.
5. Perception (background)
6. Experience with content.
7. Visual/motor coordination.
8. Saturation of evaluation.
9. Ergonomics - familiarity with machines
10. Age
11. Optimist/pessimist
12. Contact with students
13. Interpretation of semantics on evaluation instrument
14. Familiarity with evaluation instrument
15. Format of program vs. educational philosophy
16. Level of teaching (elementary, junior high, high school)
17. Preparation involved

RESEARCH FINDINGS ON CAI

- EQUAL OR BETTER ACHIEVEMENT IN LESS TIME THAN TRADITIONAL METHODS
- STUDENTS HAVE A POSITIVE ATTITUDE, HIGHER MOTIVATION, LONGER ATTENTION SPAN, AND BETTER ATTENDANCE
- ADJUNCT CAI PROVEN MOST EFFECTIVE

FDLRS Network Software Evaluation Form

Part A: Program Summary

FDLRS Reviewing Center: _____ Date of Review: _____

Evaluator/s: _____ Program Rating: _____

Description/Identification

Program Name: _____

Program Components: _____

Publisher: _____ Copyright Date: _____

Address: _____ Preview Policy: _____

_____ Back-up Policy: _____

Hardware Configuration (include all):

Computer/Model	Memory Required	Storage Medium
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Input Peripherals: _____

Output Peripherals: _____

Special Requirements: _____

Subject (include all):

- ☐ Mathematics
- ☐ Language Arts/ Reading
- ☐ Social Studies
- ☐ Science
- ☐ Readiness
- ☐ Career Education/ Vocational Education
- ☐ The Arts
- ☐ Auditory/Visual/ Perceptual Motor
- ☐ Other: _____

Program Uses (include all):

- ☐ Drill/Practice
- ☐ Tutorial
- ☐ Instructional Game
- ☐ Problem-Solving
- ☐ Simulation
- ☐ Instructional Utility
- ☐ Diagnostic/Prescriptive
- ☐ Instructional Management
- ☐ Other: _____

Instructional Levels:

Developmental Level: _____* Interest Level: _____

**Classifications:* *Birth to three years, Readiness, Primary, Intermediate, Middle School, Secondary, Adult*

Reading Grade Level: _____ Minimum Time for Execution: _____

Instructional Grouping: ☐ Individual ☐ Small Group ☐ Class

FDLRS Network Software Evaluation Form
Part B: Instructional Integrity

Program Name: _____

Center Evaluator/s: _____

Use the following scale to rate each component.
Circle the response which best reflects your judgment.

SA = Strongly Agree A = Agree N = Neutral D = Disagree SD = Strongly Disagree
N/A = Not Applicable

SA	A	N	D	SD	N/A	1. Program content is accurate.
SA	A	N	D	SD	N/A	2. Program is organized in sequential manner and in appropriate developmental steps.
SA	A	N	D	SD	N/A	3. Program utilizes previous learning and/or student experience.
SA	A	N	D	SD	N/A	4. Graphics/color/sound are used for appropriate instructional reason.
SA	A	N	D	SD	N/A	5. Rate of program presentation is controlled by student.
SA	A	N	D	SD	N/A	6. The level of reading required for the program is consistent with the developmental level of the content.
SA	A	N	D	SD	N/A	7. Program is effective with individual learning styles.
SA	A	N	D	SD	N/A	8. Program provides appropriate student feedback.
SA	A	N	D	SD	N/A	9. Program provides for interaction with the student.
SA	A	N	D	SD	N/A	10. Program provides a variety of appropriate reinforcements.
SA	A	N	D	SD	N/A	11. Program format appeals to students.
SA	A	N	D	SD	N/A	12. Program is free of sexual, racial and cultural bias as well as excessive competition and violence.
SA	A	N	D	SD	N/A	13. Learning from program will generalize to other experiences.
SA	A	N	D	SD	N/A	14. Documentation/program defines prerequisite skills/vocabulary.
SA	A	N	D	SD	N/A	15. Documentation/program provides supplementary materials/ suggested activities for reinforcement.

Comments: _____

FDLRS Network Software Evaluation Form
Part C: Technical Quality/Utility

Program Name: _____

Center Evaluator/s: _____

Use the following scale to rate each component.
Circle the response which best reflects your judgment.

SA = Strongly Agree A = Agree N = Neutral D = Disagree SD = Strongly Disagree
N/A = Not Applicable

SA	A	N	D	SD	N/A	1. Program is an appropriate/effective use of computer.
SA	A	N	D	SD	N/A	2. Program and documentation are free of errors.
SA	A	N	D	SD	N/A	3. Program text is formulated effectively on screen.
SA	A	N	D	SD	N/A	4. Graphic displays are effective.
SA	A	N	D	SD	N/A	5. Program is technically sound and easy to operate.
SA	A	N	D	SD	N/A	6. Program handles inappropriate/unexpected responses effectively.
SA	A	N	D	SD	N/A	7. Program is "crash-proof."
SA	A	N	D	SD	N/A	8. Program allows for repeated and/or prolonged use in the curriculum.
SA	A	N	D	SD	N/A	9. The speed of program presentation matches individual learning styles.
SA	A	N	D	SD	N/A	10. A student may use the program independently after training.
SA	A	N	D	SD	N/A	11. Teacher's instructions are well-organized, useful and easy to understand.
SA	A	N	D	SD	N/A	12. The initial cost of the program is reasonable for the expected use of the program.
SA	A	N	D	SD	N/A	13. The amount of preparation/training required for a teacher to operate the program is reasonable for the intent of the program.
SA	A	N	D	SD	N/A	14. The program is packaged so that it can be easily used and safely stored.

Comments: _____

_____

_____

_____

_____

_____

_____

FDLRS Network Software Evaluation Form
Part D: Summary Assessment Worksheet

Program Name: _____

Center Evaluator/s: _____

Major Strengths of Program:

_____

_____

_____

_____

Major Weaknesses of Program:

_____

_____

_____

_____

Potential Use of Program in Curriculum of Exceptional Students (If Recommended):

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Correlation with Florida Student Minimum Performance Standards:

_____

_____

_____

_____

FDLRS Network Software Evaluation Form
Part E: Center Evaluator's Summary

Program Name: _____

Center Evaluator/s: _____

1. Based on the following scale, give the program an overall rating.

   5 = Excellent 4 = Good 3 = Adequate 2 = Poor 1 = Unacceptable

   Overall Rating: _____

2. Check the appropriate statement:

   - ☐ I recommend this program for teacher use with exceptional students.
   - ☐ I recommend this program for parent use with exceptional students.
   - ☐ I recommend this program for use with exceptional students with qualification. (Note reason in summary.)
   - ☐ I would not recommend this program for use with exceptional students. (Note reason in summary.)

3. Write a brief *summary* of the results of your review of the program. Include, as appropriate, goals/objectives of program, content/format, target exceptional education group/s, how program can be used, instructional/educational value, teacher/student evaluation, other appropriate topics, recommendation.

   _____

   _____

   _____

   _____

   _____

   _____

4. Recommendations to producer for improving program for use in curriculum of exceptional students.

   _____

   _____

   _____

   _____

5. (Optional) Indicate other sources which have reviewed the program.

   _____

   _____

(Attach copy of any Teacher's Software Evaluation forms which were completed for this program.)

FDLRS Network Software Evaluation Form

Teacher's Evaluation of Software Form

General Information

Program Name: _____

Teacher: _____ Date _____

Exceptionality: _____ ☐ Self-Contained ☐ Resource ☐ Itinerant

Subject/Curriculum: _____ Grade Level: _____ Age Level: _____

School: _____ District: _____

Computer Setting: ☐ Classroom ☐ Computer Lab ☐ Media Center ☐ Other: _____

Teacher Checklist

Circle your favored response:

Yes No N/A 1. Program is appropriate for age and ability groups of my students.
Yes No N/A 2. Program is compatible with curriculum of my students.
Yes No N/A 3. Program addresses a curriculum need in a more effective way than other methods I have used.
Yes No N/A 4. The program's repeatability, flexibility and/or duration are worth the price.
Yes No N/A 5. My students have the prerequisite cognitive skills for program content.
Yes No N/A 6. My students have the tool skills necessary to operate the program, including visual-perceptual skills and motor skills.
7. The program meets my needs for:
Yes No N/A a. diagnostic/prescriptive procedures
Yes No N/A b. IEP goals/objectives
Yes No N/A c. management of information
Yes No N/A 8. The amount of teacher involvement required for student success with the program is acceptable.
Yes No N/A 9. The program maintained the interest of my students.
Yes No N/A 10. The rate of the program could be adapted to individual student needs.

Program Rating/Recommendations

Rate the program on the following scale:

5=Excellent 4=Good 3=Adequate 2=Poor 1=Unacceptable Overall Rating: _____

Check the following statements which best reflect your opinion:

☐ 1. I would recommend this program to other teachers for use with exceptional education students.
☐ 2. I would recommend this program to other teachers for use with exceptional education students under certain conditons. (State conditions under comments.)
☐ 3. I would not recommend this program to other teachers for use with exceptional education students. (Note reason(s) under comments.)
☐ 4. I would recommend this program to parents of my students for use at home.

Comments: _____

_____

VI. BASIC PROGRAMMING

Write a flowchart for doing the dishes. Include every possible step.

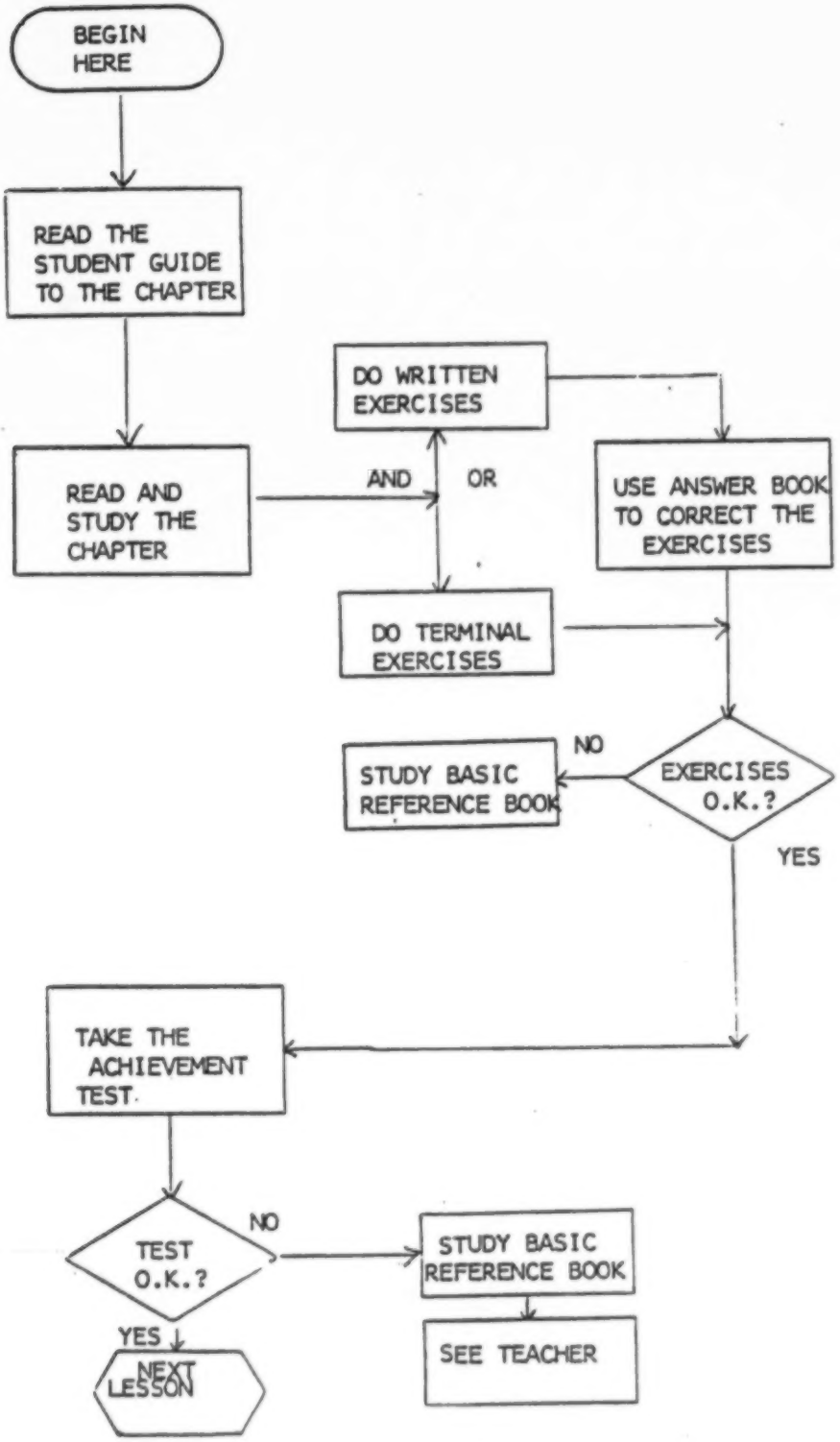
Two arithmetic operation signs are different from those taught in many math classes. What are they?

Can you think why the "zero" and the "O" and the "1" and the "l" cannot be used interchangeably on a computer as they are on some typewriters?

Why is a computer program necessary?

FLOW CHARTING SAMPLE

FOLLOW THESE PROCEDURES FOR EACH CHAPTER IN THE BOOK



SYMBOLS

FOR ARITHMETIC OPERATIONS

BASIC

+	*ADDITION*
−	*SUBTRACTION*
*	*MULTIPLICATION*
/	*DIVISION*
↑	*EXPONENTIATION*
<	*IS LESS THAN*
>	*IS GREATER THAN*
=	*IS EQUAL TO*
<>	*IS NOT EQUAL TO*
<=	*IS LESS THAN OR EQUAL TO*
=>	*IS GREATER THAN OR EQUAL TO*

SYSTEM COMMANDS IN BASIC

LIST - gives you a listing of the program you typed into the computer.

RUN - executes the program

NEW - erases RAM

EDIT - commands vary from machine to machine but they allow you to add, delete, and correct mistakes without retyping the entire line.

SAVE "------" - stores the program on disk. The program must have a filename.

LOAD "------" - puts program from disk into RAM

BASIC STATEMENTS

LET - assigns a value to a variable, computer stores it at an "address"

PRINT "-----" - prints what is in quotes

PRINT A - prints a numerical value for A

INPUT A - Computer asks for a value for A to be typed in by the user.

INPUT "Value of A";A - User friendly way of asking for a value for A.

REMARK (REM) - form of documentation/comment. LISTs with the program but the computer ignores all REM when you RUN the program.

END - stops program

PRINT A$ - (read PRINT A string) - prints alpha values for A

PRINT TAB(5);"-----" - sets up a tab on the grid of the computer.

The following are examples to be tried on the computer. Between each (unless the lines are preceeded by a "**"), type NEW to clear the old program from memory. At the end of each program type RUN to make the program operate.(CR refers to carriage return or press ENTER key.)

EXAMPLES FOR "PRINT" AND "LINE NUMBERS"

```
NEW (CR)
10 PRINT "OPEN"  (CR)
20 PRINT "THE"  (CR)
30 PRINT "DOOR"  (CR)
RUN

NEW
30 PRINT "YOU!!"  (CR)
10 PRINT "I"  (CR)
20 PRINT "LOVE"  (CR)
RUN

**
15 PRINT "DON'T"  (CR)
RUN

**
30          (JUST TYPE LINE NUMBER)
RUN

**
16 END
RUN
```

EXAMPLES FOR "PRINT" WITH VERTICAL SPACING

```
NEW
10 PRINT "BEGIN"
20 PRINT : PRINT: PRINT:
30 PRINT "MIDDLE"
40 PRINT
50 PRINT
60 PRINT "END"
RUN
```

THE ENDLESS LOOP

```
NEW
10 PRINT "YOUR FIRST AND LAST NAME",
20 GOTO 10
30 END
RUN
```

(HIT "BREAK" KEY TO STOP THE PROGRAM

```
**
10 PRINT "YOUR FIRST AND LAST NAME";
RUN
```

EXAMPLE FOR "PRINT" WITH TAB

```
NEW
10 PRINT TAB(20) "THIS MESSAGE IS SPACED!!"
RUN
```

EXAMPLES FOR THE "LET" STATEMENT

```
NEW
10 LET A=5
20 LET B=10
30 LET C=15
40 LET D=(A+B+C)/3
50 PRINT "THE AVERAGE IS";D
60 END
RUN
```

```
NEW
10 LET A$="EVERYBODY"
20 LET B$="NEEDS"
30 LET C$="SOMEBODY!!"
40 LET D$=A$+B$+C$
50 PRINT D$
60 END
RUN
```

EXAMPLES FOR THE "INPUT" STATEMENT

```
NEW
10 PRINT "ENTER YOUR NAME"
20 INPUT N$
30 PRINT
40 PRINT "YOUR NAME IS";N$
RUN
```

EXAMPLES OF THE "FOR NEXT" STATEMENT

```
NEW
10 FOR I=1 TO 127
20 FOR J=1 TO 47
30 SET (I,J)
40 NEXT J
50 NEXT I
RUN
```

PUSH THE CLEAR KEY ON THE COMPUTER
Type the following on the screen

SHUNRKPDRBILSZE

Hold the SHIFT KEY and hit the RIGHT ARROW KEY. (Letters will double in size). Hit the CLEAR KEY to return to regular size letters.

SAMPLE PROGRAMS

```
10 INPUT "WHAT IS YOUR NAME"; A$
20 INPUT "HOW OLD ARE YOU - PLEASE DON'T LIE!";A
30 PRINT
40 PRINT
50 PRINT "HELLO!";A$
60 PRINT "CONGRATULATIONS!!!"
70 PRINT "YOU ARE ONLY 39 YEARS OLD!"
80 PRINT "I THOUGHT I TOLD YOU NOT TO LIE!!"
90 PRINT
100 PRINT
110 END
```

```
NEW
10 REM - CALCULATE THE AREA OF A TRIANGLE
20 INPUT "WHAT IS THE BASE OF A TRIANGLE";B
30 INPUT "WHAT IS THE HEIGHT OF THE TRIANGLE";H
40 LET A = (1/2)*B*H
50 PRINT "BASE  HEIGHT AREA"
60 PRINT "----  ------ ----"
70 PRINT
80 PRINT B,H,A
90 PRINT
100 END
```

VII. COPYRIGHT

Define the three (3) types of software.

commercial, copyrighted software

licensed, copyrighted software

public domain

Why is it necessary to have a district procedure on copyright?

D-8.143 USE OF COPYRIGHTED MATERIALS

(1) General. No copyrighted materials shall be reproduced by any employee without prior written permission from the copyright owner unless a clear educational fair use exception exists within the guidelines set out below.

(2) Educational Fair Use of printed material and music.

(a) Instructional employees are permitted to make single copies of the following copyrighted works for their own use in scholarly research or classroom preparation:

1. A chapter from a book.
2. An article from a periodical or newspaper.
3. A short story, short essay, or short poem.
4. A chart, graph, diagram, drawing, cartoon, or picture from a book, newspaper, or periodical.
5. A short excerpt (up to 10%) from a performable unit of music, such as a song, movement, or section, for study purposes.

(b) Instructional employees are permitted to make multiple copies of the following copyrighted works for use in the classroom (with the number of copies not to exceed one copy per student in the class).

1. A complete poem, if it is less than 250 words and printed on not more than two pages.
2. An excerpt from a longer poem, if said excerpt is less than 250 words.
3. A complete article, story, or essay, if it is less than 2,500 words.
4. An excerpt from a prose work, if said excerpt is less than 1,000 words or 10% of the work, whichever is less.
5. One chart, diagram, drawing, cartoon, or picture per book or periodical.
6. Up to 10% of a performance unit of music for academic purposes other than performance.

(c) Instructional employees may also:

1. Make a single recording of student performances for evaluation, rehearsal, or archival purposes.
2. Make a single recording of aural exercises or examination questions using excerpts from recorded copyright materials.
3. Make an emergency replacement copy to substitute for a purchased copy that is not available for an imminent musical performance.
4. Display a copy of a work on an opaque projector.
5. Make a single transparency, provided the criteria in (2)(a) 4 above are complied with.

(d) Instructional employees may not make multiple copies of:

1. A work for classroom use if another instructional employee at the school has already copied it for use in his or her class.
2. A short poem, article, story, or essay from the same author more than once in the same term.
3. From the same collective works or periodical issue more than three times a term.
4. "Consumable" materials such as workbooks.
5. Works that would be used to take the place of an anthology.

(3) Educational Fair Use of material transmitted via broadcast media:

(a) The off-air recording of any instructional program broadcast over ITV is permitted unless the Department of Instructional Support Services informs employees otherwise.

(b) All other off-air recording is prohibited absent prior written permission from the copyright owner.

(4) Print Shop and Library Services.

(a) No copyrighted materials will be reproduced by the Palm Beach County School Board Print Shop or libraries unless accompanied by a signed authorization from the copyright owner or statement of educational fair use signed by the responsible instructional employee. (Form ISS-001 and ISS-002).

(b) All requests for reproduction by the Print Shop of copyrighted materials shall be submitted to the Print Shop by:

1. In the case of requests from school centers, the principal - or his designee;
2. In the case of requests from other than school centers, the appropriate assistant superintendent, area superintendent, deputy superintendent, or through the Superintendent of Schools.

(5) Computer Software.

(a) No copyrighted computer software shall be reproduced, adapted or modified by any employee of the Palm Beach County School Board absent prior written permission from the copyright owner unless:

1. Such a new copy or adaption is created as an essential step in the utilization of the computer program in conjunction with the machine and that it is used in no other manner, or
2. Such new copy or adaption is for archival purposes only and that all archival copies are destroyed in the event the continued possession of the computer program should cease to be rightful.

(b) Every effort should be made at the time of purchase to obtain the necessary permission to reproduce, adapt or modify the copyrighted computer software item(s).

(c) No copyrighted computer software shall be reproduced, adapted or modified by any employee of the Palm Beach County School Board unless that employee submits signed authorization form # PBSD 0746 to the section of Instructional Computer Services in the Division of Regular Instruction prior to said reproduction, modification or adaption.

(d) No computer hardware or software owned or leased by the Board shall be used by any employee or student of the School Board of Palm Beach County for personal gain or profit.

Reference: 17 USCS, Sections 101-810
(PL 94-553, 90 STAT 2541)

History: New: 10/18/82

Revised: 8/15/83

Form PBSD 0746

COPYRIGHT AGREEMENT

Vendor Name: _____

Vendor Address: _____

_____
City State Zip

Vendor Telephone: ( ) _____

AGREEMENT

_____ authorizes the School
(Vendor)

Board of Palm Beach County to:

A. Microcomputer Software

( ) 1. Modify purchased program(s) for use on a network system.

( ) 2. Transfer purchased program(s) to user disk with necessary modifications.

( ) 3. Transfer modified program(s) to a hard disk with necessary modifications.

( ) 4. Other: _____

_____

B. Printed and Other Materials _____

_____

School Board of Palm Beach County
Florida

By: _____
Chairman

Attest: _____
Secretary

_____
Vendor

By: _____

Title: _____

Signed this _____ day of _____, 198__.

BOARD MEMBERS

Frank Burkett, Chairman
Robert A. Anderson
Bill Baker
Lynn Demetriades
Sandra M. Goforth

SUPERINTENDENT

Robert L. Blubaugh

School Board of Brevard County
DIVISION OF EXCEPTIONAL STUDENT EDUCATION
AND STUDENT SERVICES
1450 Martin Boulevard, Merritt Island, Florida 32952

By using software from the Exceptional Education Department,

(1) I ACKNOWLEDGE THE NEED TO CARE FOR THE DISKETTES PROPERLY AND,

(2) I AGREE TO ABIDE BY THE COPYRIGHT LAWS WHICH PROHIBIT DUPLICATING OR MODIFYING PROGRAMS.

Name _____

Position _____

School _____

Date _____

An Equal Opportunity Employer

COMPUTER RELATED TERMS

ACCESS - Time spent on the computer.

ACOUSTIC COUPLER - A piece of equipment, usually shaped like a small box, which can be used with a computer and telephone to connect to another computer. The **acoustic coupler** changes the information into signals.

ADDRESS - A number or name that tells where to find a place in a computer's memory.

ALIGNMENT NOTCHES - Two small semicircular notches in the disk jacket that ensure that it is properly inserted in the disk drive.

ARITHMETIC UNIT - The part of the computer which does the mathematics of a problem.

ASCII CODE - The American National Standard Code for Information Interchange. The code by which characters are translated into numbers in a computer's memory. Each ASCII code number uses 1 byte of computer memory.

ASSEMBLY LANGUAGE - A low-level symbolic programming language that uses mnemonic codes such as ADD, LDA, 'SUB etc. Historically the first programming aid.

AUTHORING LANGUAGE - A computer program which helps a person to write lessons for a computer. A person does not have to know how to program a computer to write lessons using an **authoring language.** PILOT is an **authoring language.**

BASIC - Beginners All Purpose Symbolic Instruction Code. A widely used high-level programming language.

BATCH PROCESSING - A way of putting together a group of programs for the computer.

BAUD RATE - The amount of bits that a computer can send (normally through the telephone) in one second. You normally hear of 300 baud or 1200 baud.

BINARY CODE - The base-two number system which uses the digits 0 and 1. The first four numbers in binary are 00, 01, 10, 11. Computers use binary because electronic components can be made cheaply to switch "on" and "off".

BIT - BInary digiT. A bit is the smallest unit of computer information.

BRANCHING - Refers to a computer program routine which provides a choice between two alternative paths. For example, if a student misses three problems in a row, the computer may **branch** to a section of the program that represents easier problems.

BUG - A mistake in a computer program. The bug must be corrected before the computer can RUN the program.

BUS - A path that carries electrical signals and information inside the computer.

BYTE - A group of adjacent bits. The most common size byte is 8 bits, although 16 is also used.

CAI - Computer Assisted Instruction. Software programs designed for educational purposes.

CASSETTE RECORDER - Input mode that can be used to store computer programs. Operates sequentially.

CATHODE RAY TUBE (CRT) - Output device. A television set or a monitor is a CRT. CRT resolution varies and will affect the quality of print and graphics.

CENTRAL PROCESSING UNIT (CPU) - Microprocessor where information is manipulated.

CHARACTER - Any symbol that you can type on the computer keyboard.

CHIP - Complex integrated circuit that is manufactured on a small piece of silicon. A chip is about the size of a finger nail and can contain the central processing unit or memory of a computer.

COBOL - COmmon Business Oriented Language used to program business computers.

CODE - Set of instructions for the computer. The code is also called the program.

COMMAND - An instruction to the computer to perform a task.

COMPILER - Translates the entire program into machine language before the program can RUN. PASCAL is a compiler language.

CONTROL UNIT - Is the part of the computer that directs the movement of the information in the computer.

COURSEWARE - Microcomputer software designed for education. Includes accompanying materials such as textbooks or workbooks. The term is frequently used interchangeably with software or computer assisted instruction.

CURSOR - The blinking square on a computer screen (monitor or CRT) used to show where the next input will print.

DATA - Information of any kind that is stored in a "datafile".

DEBUG - To find and correct mistakes in a computer program so that the program will run smoothly. Syntax errors are identified by the computer but logic errors must be discovered by the programmer.

DIGITAL COMPUTER - A computer with a memory that works by using numbers and follows a set of instructions called a program.

DISK - DISKETTE - MAGNETIC DISK - FLOPPY DISK - A storage device that puts information on a magnetically sensitive surface. Standard sizes are 5 1/4 and 8" floppies.

DISK OPERATING SYSTEM (DOS) - A program used by a computer with a disk drive that tells the computer how to use the disk.

DISPLAY - Pictures or words on the microcomputer screen.

DOCUMENTATION - Refers to the written materials which accompany and describe a computer program.

DOUBLE-DENSITY DISK - A disk on which twice as much information can be stored through use of disk-drive head that emits a data pulse every 4 microseconds-twice as fast as that of a single-density disk.

DOUBLE-SIDED DISK - A disk that can store information on both sides.

DOWNLOAD - Sending information from a large computer to a smaller computer. Often you download information from one computer to another through the telephone lines.

EDIT - To change information in some way.

END - Statement in a computer program that tells the computer it has reached the end of the program.

ENTER - To type information into the computer.

FILE - A sequence of related records stored on a disk, cassette or in a mass storage system.

FLOWCHART - A drawing that represents orderly steps in problem solving. Used by programmers in writing computer programs.

FORMAT - The arrangement by which information is stored on a floppy disk in tracks and sectors.

FORMATTING - The process by which the disk operating system organizes a floppy disk into tracks and sectors for storing data.

FORTRAN - FORmula TRANslation is a computer language used by scientists. It is a compiler language.

GENERATION - A computer generation is a group of computers using certain kinds of parts. There have been three identified computer generations.

GRAPHICS - Refers to drawings, pictures, charts or animated figures displayed on the computer screen.

HARD COPY - A printed paper copy of a computer program and/or images that appear on the display screen: printout.

HARDWARE - The computer machinery as opposed to the computer program (software).

HOME COMPUTER - A small computer used in the home usually costing less than $1,000.

INFORMATION RETRIEVAL - Information that is stored in a computer that can be retrieved from the computer's memory.

INPUT - Information that goes into the computer normally through use of the keyboard.

INTERFACE - A piece of equipment that links two computer attachments.

INTERPRETER LANGUAGE - Translates a high-level language to machine code line by line every time they are run. BASIC is an interpreter language.

I/O - Input/Output. A generalized expression for the action of sending information into a computer (input) and getting it out of the computer (output).

JOYSTICK - A moveable control stick used to steer things on a computer monitor.

K - 1,024 bytes of memory capacity in a computer. Computers hold a specific amount of K: 16K, 32K, 48K. K is an abbreviation for "kilobyte".

KEYBOARD - A set of keys on which to type information or instructions for the computer.

LIGHT PEN - Looks like a writing pen. It can be used to draw pictures on special computer screens.

LIST - A printout of the program which was typed into the computer.

LOAD - To take information from a diskette or cassette and put it into the computer.

LOGICAL ERROR - Telling the computer to add when you really want it to subtract. The computer CANNOT detect a logical error.

LOOPING - A programming technique where a portion of a program is

repeated over and over until a certain result is obtained.

LSI - Large Scale Integration. A way of making denser and more complex integrated circuits. Eventually LSI will be replaced by VLSI (Very Large Scale Integration) and that will be replaced by ELSI (Extremely Large Scale Integration).

M.D.A.S. - Multiply, divide, add, subtract. The order in which the computer always does mathematical calculations. 3 + 10 - 2 x 14 / 7 = 9 (Note: No matter how a math problem is written, the computer will perform operations in the following order: powers, parenthesis, M.D.A.S.)

MACHINE LANGUAGE - The lowest level of computer programming which uses only numbers. The computer understands machine language without the aid of another program.

MEGABYTE - 1 million bytes of information

MEMORY - A place in the computer that stores information.

MENU - A list of choices on the screen from which the user may select.

MICROCOMPUTER - A small computer whose memory and processing units are chips.

MICROPROCESSOR - All the essential electronics of a computer miniaturized to a single chip.

MODEM - Contraction of the two words MOdulator and DEModulator. It is a piece of equipment that lets the computer talk to another computer over a telephone hooked to an acoustic coupler or by direct-connect jacks attached from the phone line into the computer.

NANOSECOND - A billionth of a second. It is faster than lightning. Computers work in nanoseconds.

NETWORK - An interconnected group of computers, terminals or even telephones.

OFF-LINE - Refers to computer equipment which is not at the time directly connected to the computer.

ON-LINE - Describes the condition of a piece of computer equipment which is directly connected to the computer.

OPTICAL SCANNER - A machine that looks at a code that the computer can understand. The code may be pencil marks on mark-sense cards or pen marks on paper.

OUTPUT - The final results of the computer's processing.

PASCAL - Computer language frequently used by educators and business programmers. It is now found on the Advanced Placement college exam.

PATCH - A quick change to an existing program to cause it to operate differently.

PERIPHERAL - A device which is connected to the computer. Examples include printer, acoustic coupler, joystick, modem etc.

PRINTOUT - A listing or picture made by a printer. Also called hard copy.

PRINTER - A machine that prints on paper the information (output) that comes from a computer.

PROGRAM - List of step by step instructions written in a computer language which tell the computer what to do.

RAM - Random Access Memory. The reusable memory in your computer that can be easily changed and will erase when the computer is turned off but which can be transfered to a diskette for storage.

READ - To get the information that is stored in the computer's memory out of the memory and into another place where it can be used.

ROM - Read Only Memory. The memory inside the machine. The internal programming the machine has to remember to be able to handle the software programs. It is permanent and cannot be changed by the user.

SECTOR - The fraction of a circular disk track on which data is stored. The number of sectors of a soft-sectored disk is determined when it is formatted by a disk operating system. Typical values are between 10 to 16.

SINGLE-DENSITY DISK - A disk that stores between 128 and 256 bytes per second. A single-density disk-drive head emits a data pulse every 8 microseconds as the disk rotates.

SOFTWARE - Programs and data that go into the computer.

STORAGE - The place where memory is held inside the computer, also called memory or K.

SYNTAX ERROR - Mistake in program sequence or in the rules of grammar for a computer language so that the computer cannot continue the program.

TIME SHARING - Many people using a computer at the same time. Access is normally at the convenience of the user. DIALOG and BRS have time sharing capability.

TRACK - A circular strip on a disk's surface on which data is stored.

UNIVERSAL PRODUCT CODE (UPC) - A coded bar marking on packages in a store which a computer understands.

UPLOAD - To send information from a small computer to a large computer.

USER - A person who works with a computer.

VACUUM TUBES - Electrical parts used in first generation computers.

WRITE-PROTECT - To protect computer programs so they cannot be changed. (There is a write-protect notch on the floppy disk).

ANSWERS

II. HISTORY AND IMPACT OF COMPUTERS

1. False
2. True
3. False
4. True
5. True
6. False
7. False
8. True
9. True
10. True

List 10 places, items or pieces of equipment that have computers.

traffic light	microwave oven
police license check	grocery check out
bank checks	digital watch
air traffic control	new integrated circuit TV
space shuttle	infrared light scanner at Sears/Penneys

III. PARTS OF THE COMPUTER (HARDWARE)

Identify the four major parts of the microcomputer.

1. monitor
2. CPU
3. disk drive
4. keyboard

The CPU has 3 major parts. Identify them.

Control
Arithmetic mode
Memory

What is the difference between RAM and ROM

RAM - Random Access Memory is temporary storage of memory that can be manipulated by the computer user.

ROM - Read Only Memory is permanent memory installed by the manufacturer.

Most common INPUT DEVICE

keyboard

Two most common OUTPUT DEVICES

monitor
printer

Why would you use CONTROL, OPEN APPLE, RESET together on an Apple

To reboot (i.e. restart) the computer when it is already turned on. This clears RAM and allows the start of a new computer program.

ANSWERS

IV. COMPUTER PROGRAM (SOFTWARE)

Identify the parts of the floppy diskette

1. label
2. write protect notch
3. write protect tab
4. drive hole/diskette
5. jacket
6. sector hole
7. storage envelope
8. read/write window

What is the "thumb rule"?

Grab the diskette with your thumb by the label. Do NOT touch the other end of the diskette where the read/write window is located.

List 6 things that can damage a floppy diskette.

heat	sunlight
magnets	hand prints
pencil	liquids
bending or folding	paper clips
heavy objects	dust

Define the following:

CAI - Computer Assisted Instruction. Software programs designed for educational use.

simulation - Permits student to experience real-life problem solving situations in a low-cost low-risk environment.

drill and practice - Repetitive, reinforcement of learning experience.

CMI - Computer Managed Instruction - A systematic control of instruction by the computer. Includes testing, diagnosis, prescription learning and record keeping of student progress.

tutorial - Presents new or previously unlearned material.

ANSWERS

V. SOFTWARE EVALUATION

List five things to look for when evaluating a software program for instructional integrity.

- accuracy
- appropriate color/graphics
- reading level
- feedback
- appropriate reinforcements
- free of bias
- sequential organization
- student control of rate
- developmental level
- interaction with student
- appealing/motivating
- good documentation

List five things to look for when evaluating a software program for technical quality.

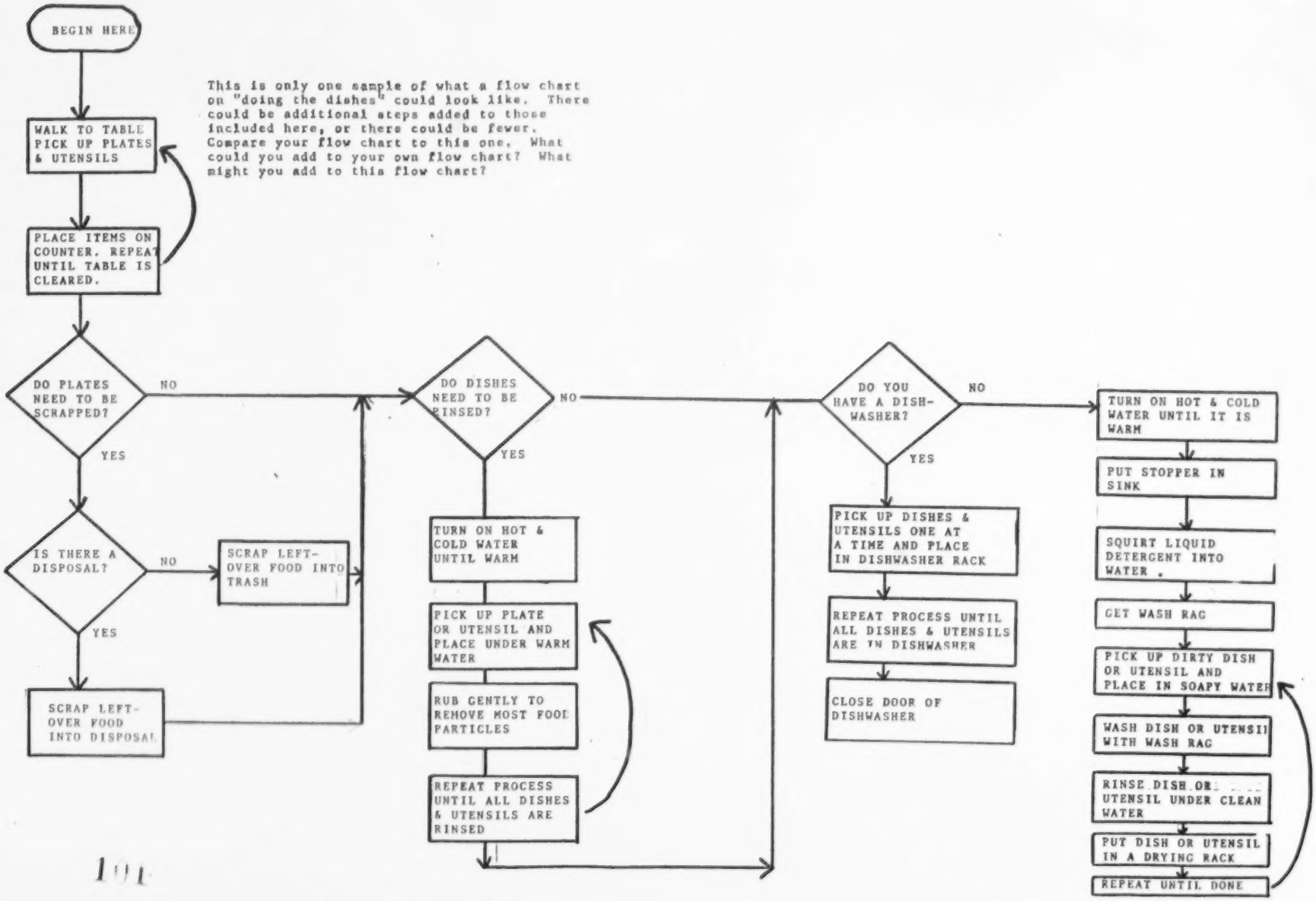
- effective use of computer
- screen format
- easy to operate
- repeated use in curriculum
- reasonable cost
- free of errors
- graphics display
- crash-proof
- appropriate documentation
- packaging

TRUE OR FALSE

1. False
2. False
3. True
4. True
5. False
6. True
7. True
8. True
9. True
10. True

VI. BASIC PROGRAMMING

Sample Flowchart


BEGIN HERE
This is only one sample of what a flow chart on "doing the dishes" could look like. There could be additional steps added to those included here, or there could be fewer. Compare your flow chart to this one. What could you add to your own flow chart? What might you add to this flow chart?
WALK TO TABLE PICK UP PLATES & UTENSILS
PLACE ITEMS ON COUNTER. REPEAT UNTIL TABLE IS CLEARED.
DO PLATES NEED TO BE SCRAPPED?
NO
YES
IS THERE A DISPOSAL?
NO
SCRAP LEFT-OVER FOOD INTO TRASH
YES
SCRAP LEFT-OVER FOOD INTO DISPOSAL
DO DISHES NEED TO BE RINSED?
NO
YES
TURN ON HOT & COLD WATER UNTIL WARM
PICK UP PLATE OR UTENSIL AND PLACE UNDER WARM WATER
RUB GENTLY TO REMOVE MOST FOOD PARTICLES
REPEAT PROCESS UNTIL ALL DISHES & UTENSILS ARE RINSED
DO YOU HAVE A DISH-WASHER?
NO
YES
PICK UP DISHES & UTENSILS ONE AT A TIME AND PLACE IN DISHWASHER RACK
REPEAT PROCESS UNTIL ALL DISHES & UTENSILS ARE IN DISHWASHER
CLOSE DOOR OF DISHWASHER
TURN ON HOT & COLD WATER UNTIL IT IS WARM
PUT STOPPER IN SINK
SQUIRT LIQUID DETERGENT INTO WATER .
GET WASH RAG
PICK UP DIRTY DISH OR UTENSIL AND PLACE IN SOAPY WATER
WASH DISH OR UTENSIL WITH WASH RAG
RINSE DISH OR UTENSIL UNDER CLEAN WATER
PUT DISH OR UTENSIL IN A DRYING RACK
REPEAT UNTIL DONE

ANSWERS

VI. BASIC PROGRAMMING continued

Two arithmetic operation signs that are different from those taught in many math classes.

division multiplication exponentiation

Can you think why the "zero" and the "O" and the "1" and the "l" cannot be used interchangeably on a computer as they are on some typewriters?

A computer has a BINARY CODE (made up of zeros and ones) for EACH character on a computer keyboard. The BINARY CODE for "zero" and "O" and for "1" and "l" are different. Those characters may "look alike" but they have very different meaning to a computer.

Why is a computer program necessary?

A computer cannot operate without directions. A computer program provides sequential, logical directions.

ANSWERS

VII. COPYRIGHT

Define the three (3) types of software

commercial, copyrighted software - produced by manufacturers who purchase a "right to copy" license from the federal government. The intention of the manufacturers is to make a profit, therefore, their intention is for the user to buy copies of the product. This type of software cannot legally be copied.

licensed, copyrighted software - frequently developed by projects, agencies, universities or school systems, this software is protected by copyright BUT the developer allows users to buy a license contract for a set fee.. During the terms of the contract, the user is allowed to make copies of the programs as defined by the contract. MECC is the best known licensed software.

public domain software - not copyrighted, public domain software can be copied, manipulated, reprogrammed etc. at will. It is frequently obtained through user groups or through magazines that "list" a program.

Why is it necessary to have a district procedure on copyright?

A school district

1. wants to ensure personnel is obeying the law.
2. needs to protect itself from law suits resulting from illegal use of computer programs.